

NICHOLSONS

Ecological Permeability Report

Croudace Homes

Bridge Farm, Twyford

Version: 3

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REVISION HISTORY

Rev	Description of change	Date	Initials
1	Original report	07/11/2024	RJ
	Quality review	12/11/2024	CQ
	Finalised report	12/11/2024	RJ
2	Amended report following client review	25/11/2024	RJ
3	Addition of Barn Owl boxes	11/12/2024	EW

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DISCLAIMER

It should be noted that the information above provides details of the Site's current ecological situation. In the event that the proposed development does not commence within 12 months of the date of this report, further advice should be sought from a suitably qualified ecologist as to whether the information provided requires updating in light of changing ecological conditions.

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1. INTRODUCTION

Terms of Instruction

- 1.1 Nicholsons was commissioned by Croudace Homes to produce an Ecological Permeability Report for land at Bridge Farm, Twyford (hereafter referred to as “the Site”) in respect of its proposed development of the Site.

Purpose

- 1.2 Outline planning consent (Ref: 212720) was received July 2023.
- 1.3 The planning consent is subject to a series of pre-commencement Conditions, including Condition 23 which states:
- “The reserved matters for the development shall include a detailed scheme to maintain or enhance the ecological permeability of the site (especially with regard to mammals). The mitigation and contingency measures contained within the plan shall be implemented in accordance with the approved plan unless otherwise approved in writing by the local planning authority.”
- 1.4 This document will provide the requested detail and set out how contingencies and/or remedial action will be identified, agreed and implemented.

Proposed Development

- 1.5 The proposed development features the delivery of 200 dwellings, including 40% affordable housing and associated infrastructure, open space, biodiversity enhancements, landscaping and green infrastructure, following demolition of existing agricultural buildings. with associated works pursuant to Outline planning permission ref: 212720 (Wokingham Borough Council) hereafter referred to as the “Proposed Development”).

Documents Provided

- 1.6 As background information, the following documentation was provided:
- Ecological Impact Assessment (EclA) – Aspect Ecology, March 2022
 - Biodiversity Net Gain Assessment (BNGA) – Nicholsons, November 2024
 - Biodiversity Enhancement Plan (BEP) – Nicholsons, November 2024
 - Landscape Masterplan – CH038-002F-MW-10/09/24; Ilex Landscape Architects, September 2024
 - Lighting Strategy – WLC1233-LSR-001; WLC, November 2024
 - Arboricultural Impact Assessment – Bridge Farm, Twyford – Barton Hyett Associates, December 2024

Report Limitations

- 1.7 This is an ecological report and as such no reliance should be given to comments relating to buildings, engineering soils or other unrelated matters.

2. THE SITE AND BACKGROUND INFORMATION

Site Description

- 2.1 The Site is located at grid reference SU 78338 76613 (hereafter referred to as “the Site”). The assessment covered the whole of the Site, which is approximately 13.31ha in area.
- 2.2 Based on the original assessment undertaken by Aspect Ecology (March, 2022) and supported by the updated assessment in April 2024, the Site comprised four large fields previously managed for arable and pastoral land, but now consisting of modified grassland (g4). The fields were bordered by native hedgerows (h2a and h2a5) and thin strips of broadleaved woodland (w1g), with a series of derelict farm buildings in the centre of the Site (u1b5). The Site was bordered by the River Loddon (r1a) to the west, with a narrow strip of wet woodland (w1d) forming part of the riparian corridor adjacent to the river.
- 2.3 The Site is bound by the River Loddon and associated Local Wildlife Site and riparian habitat to the west. New Bath Road borders the Site to the north and a railway line borders the Site to the east. Muddlers Lane bisects the Site into two north to south.
- 2.4 The Site location plan is provided at **Figure 1** and a proposed site plan is provided at **Figure 2**.



Figure 1: Site location plan

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Figure 2: Proposed Site Plan/BNG Post-intervention Plan (Nicholsons 2024)

Ref: 991-1-NE.101-BNG Post-Intervention v3 SF 131224



LEGEND

Site boundary

Habitat

Developed land, sealed surface - hardstanding

Developed land, sealed surface - building

Ornamental shrub

Vegetated garden

Other neutral grassland - enhanced

Other neutral grassland - retained

Species-rich amenity grassland

Native wet meadow planting

Native aquatic & marginal planting

Riverine feature planting

Native woodland planting

Wet woodland - retained

Other broadleaved woodland - retained

Native scrub / shrub

Line of trees

Low native hedge

Non-native hedge

River Loddon

Scattered tree (retained)

Scattered tree (proposed)

0255075100125

m

NICHOLSONS

TITLE:
PROJECT/SITE:
CLIENT:
MAP REF:
VERSION:
DATE:
APPROVED BY:

BNG Post-Intervention
Bridge Farm, Twyford
Croudace Homes
991-1-NE.101
v3
13/12/2024
EW

SCALE:
1:2,500 @ A3
PRODUCED BY:
SF

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3. BASELINE INFORMATION

- 3.1 This section confirms the ecological habitats and protected species which occur within the Site and the impacts of the Proposed Development upon them.
- 3.2 An updated baseline botanical assessment was undertaken in April 2024 to inform the updated BNG Assessment (Nicholsons, 2024).
- 3.3 The Site largely comprised four parcels of modified grassland (g4), with fields F1 and F4 found to be in poor condition and fields F2 and F3 in good condition. Other habitats recorded included other broadleaved woodland (w1g) in poor condition, wet woodland (w1d) in moderate condition, three hedgerows (h2a) in varied condition, a tree line separating F3 and F4 in moderate condition (w1 33), an individual London plane tree in good condition (g 32), buildings (u1b5) and hardstanding (u1b). A plan confirming the habitats present within the Site prior to construction is presented in **Appendix 1**.
- 3.4 The river Loddon (r1a) and associated riparian habitat is located along the western Site boundary. The river forms part of The River Loddon Local Wildlife Site (LWS), designated for its diversity of river features (including adjacent marsh, islands, inlets riffles, river cliffs, and extensive and varied channel vegetation), rare plant species, water vole, and a variety of dragonflies and damselflies.
- 3.5 No other priority habitats were recorded within the Site. A single hybrid black poplar *Populus x Canadensis* previously recorded within hedgerow H3 on the southern Site boundary (Aspect Ecology, 2022) had since failed and was no longer recorded in the hedgerow.
- 3.6 The majority of habitats to be affected by the Proposed Development are the modified grassland parcels and species-rich native hedgerow H1 (h2a5).
- 3.7 Descriptions of habitats to be impacted are detailed below:

Hedgerows

Table 1: Descriptions of hedgerows Surveyed within the Site

Hedgerow No. (Map Reference)	Description	Overall Ecological Value
H1	Species-rich defunct hedgerow with emergent trees on the north Site boundary of field F4. Species included elder <i>Sambucus nigra</i> , oak <i>Quercus robur</i> , sycamore <i>Acer pseudoplatanus</i> , hawthorn <i>Crataegus monogyna</i> , dog rose <i>Rosa canina</i> and blackthorn <i>Prunus spinosa</i> . Ground flora consisted of bramble <i>Rubus fruticosus</i> agg., garlic mustard <i>Alliaria petiolata</i> , white deadnettle <i>Lamium album</i> , cow parsley <i>Anthriscus sylvestris</i> . This hedgerow averages 3m in width and 2m in height. Emergent trees ranged up to 6m in height.	Moderate – This habitat will be partially retained, with sections removed to facilitate road access.
H2	An intact native hedgerow with trees on the west boundary of field F4. Species included hawthorn, holly <i>Ilex aquifolium</i> , oak, lime <i>Tilia spp.</i> , sycamore, and beech <i>Fagus spp.</i> Ground flora consisted of common nettle <i>Urtica dioica</i> , ivy <i>Hedera helix</i> and bramble. This hedgerow averages 4m in width, and 4m in height. Emergent trees ranged up to 6m.	Low – This habitat will be fully retained as part of the Proposed Development.

Hedgerow No. (Map Reference)	Description	Overall Ecological Value
H3	A defunct native hedgerow with trees, gappy around the base, on the south boundary of field F2. Species included hawthorn, scots pine <i>Pinus sylvestris</i>, horse chestnut <i>Aesculus hippocastanum</i> and crack willow <i>Salix fragilis</i>. Ground flora consisted predominantly of common nettle, garlic mustard and pendulous sedge <i>Carex pendula</i>. Average width was 1.5m, average height was 3m, with emergent trees up to 8m. A veteran hybrid black poplar <i>Populus x canadensis</i> was previously recorded within this hedgerow in the EcIA (Aspect Ecology, 2022). However, this tree has since failed likely due to storm damage) as per the updated baseline assessment in April 2024 and is no longer recorded on Site.	Low – This habitat will be fully retained as part of the Proposed Development.

Modified Grassland (g4)

- 3.8 The modified grassland was the dominant habitat within the Site totalling approximately 10.75ha. This habitat was historically managed as agricultural crop and pasture until 4-5 years ago. The majority of this habitat showed signs of nutrient input or was used semi-regularly for grass silage or pasture. The fields were split into F1-F4 for the purposes of the updated baseline assessment as part of the BNGA (Nicholsons 2024).
- 3.9 F1 was the largest field located to the east of the Site. This field comprised barren brome *Bromus sterilis*, meadow brome *Bromus commutatus*, tufted hair grass *Deschampsia cespitosa*, sweet vernal *Anthoxanthum odoratum*, cleavers *Galium aparine*, common nettle *Urtica dioica*, rough meadowgrass *Poa trivialis*, Yorkshire fog *Holcus lanatus*, creeping bent *Agrostis stolonifera*, spear thistle *Cirsium vulgare*, vetch *Vicia spp.*, ragwort *Senecio jacobaea*, and field horsetail *Equisetum arvense*. A small area of bramble *Rubus fruticosus agg.* scrub and green alkanet *Pentaglottis sempervirens*, was recorded along the west boundary of F1.
- 3.10 F2 was located to the south-west of the Site, bordering the River Loddon and associated riparian habitat. This field comprised largely of common nettle, meadow brome, cock's-foot *Dactylis glomerata*, cleavers, gypsywort *Lycopus europaeus*, creeping thistle *Cirsium arvense*, spear thistle, greater willowherb *Epilobium hirsutum*, white deadnettle *Lamium album* and red deadnettle *Lamium purpureum*. Other species were recorded at smaller abundances.
- 3.11 F3 was the smallest field located in the centre of the Site, adjacent to the River Loddon riparian buffer. This field comprised of barren brome, meadow brome, common nettle, spear thistle, cock's-foot, creeping thistle, cleavers, white deadnettle, lesser burdock *Arctium minus*, broadleaved dock *Rumex obtusifolius*, creeping bent, red fescue *Festuca rubra*, and meadow foxtail *Alopecurus pratensis*.
- 3.12 F4 was located to the north-west of the Site. This field comprised of meadow brome, barren brome, meadow foxtail, sweet vernal, with herbaceous species including meadow buttercup *Ranunculus acris*, bulbous buttercup *Ranunculus bulbosus*, slender speedwell *Veronica filiformis*, thyme-leaved speedwell *Veronica serpyllifolia*, common nettle, and white deadnettle,

with other species recorded at smaller abundances. Other species were recorded at smaller abundances.

- 3.13 The majority of this habitat is to be removed as part of the Proposed Development, to be replaced primarily with newly constructed houses with associated garden spaces and hardstanding access. Approximately 2.725ha of this habitat will be enhanced through seeding of wildflower seed mixes and improved management strategy (as detailed in **Section 4** and **5**).

Other Broadleaved Woodland

- 3.14 The existing woodland strip in the centre of the Site adjacent to Muddlers Lane and field F2 is to be enhanced through the proposals from poor to moderate condition. Species consisted of oak, sycamore, horse chestnut, London plane *Platanus × acerifolia*, elder, beech *Fagus sylvatica*, holly and elm *Ulmus spp.* Ground flora consisted of garlic mustard, lords and ladies *Arum maculatum*, common nettle, bramble and common dandelion *Taraxacum officinale agg.*, with a rare abundance of hybrid bluebells *Hyacinthoides × massartiana*. The enhancement will be achieved through targeted management to improve criteria in relation to the woodland structure, desirable ecological features (including deadwood) and removing undesirable species (hybrid bluebells).

River Loddon

- 3.15 The River Loddon and associated riparian habitat is located on the west boundary of the Site. Approximately 380m of the river is adjacent to the Site. The associated riparian habitat includes fields F2 and F3, and a strip of wet woodland, with species recorded including crack willow, hawthorn, goat willow *Salix caprea*, alder *Alnus glutinosa* and elder. Bank side flora consisted of garlic mustard, meadowsweet *Filipendula ulmaria*, lesser burdock *Arctium minus*, mint *Mentha spp.* and hemlock water dropwort *Oenanthe crocata*.
- 3.16 This habitat will be enhanced through the Proposed Development through improvement to the grassland habitat and bank sides.

Protected Species

- 3.17 The combined desk study, field survey undertaken for the Site as part of the original EcIA (Aspect Ecology, 2022) and updated walkover survey by Nicholsons in April 2024 identified the following protected species to be notable in the context of the Proposed Development. Records used as part of the desk study were received from Thames Valley Environmental Records Centre (TVERC).

3.18

3.19

3.20



Bats

- 3.21 The existing buildings within the Site were determined to provide negligible suitability for roosting bats with the exception of **B7** which was found to have Low suitability. No bats were recorded using B7 during nocturnal surveys carried out by Aspect Ecology (EcIA, 2022).
- 3.22 A total of 18 trees were recorded for having potential for roosting bats (EcIA, 2022) all of which are to be retained as part of the Proposed Development.
- 3.23 The tree lines, hedgerows, woodland and the River Loddon offer potential foraging/commuting habitat for bats and numerous foraging and commuting bats were recorded during the activity surveys, including frequent passes from common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus* and occasional passes from brown long-eared bat *Plecotus auritus*. The Site is considered to be of at least local or district level value to bats based on the results of the activity surveys (EcIA, 2022).
- 3.24 The majority of the linear features within the Site will be retained under the proposals including the wet woodland along the western boundary adjacent to the River Loddon and numerous hedgerows within the Site. In addition, significant new tree, hedgerow and shrub planting will be incorporated within the areas of public open space along the western and southern eastern corner of the Site, associated with the existing retained linear features (see Landscape Masterplan (Ilex Landscape Architects, September 2024) for more detail). The newly created habitat features will improve connectivity through the Site and increase the foraging potential. The River Loddon is also to be fully retained and enhanced and will therefore provide further offsite connectivity to the wider local landscape for commuting bats. Additional installation of bat boxes will provide extra opportunities for roosting bats throughout the Site (details provided in BEP, **Appendix 3**).
- 3.25 Further mitigation measures required include minimising the impact of light-spill from the residential development on the commuting and foraging corridors for bats associated with the existing and enhanced linear features. This has been assessed within **Section 4** in respect of the Lighting Strategy.

Birds

- 3.26 The condition of the grassland habitats recorded during the original surveys (EcIA, 2022) and the updated walkover in April 2024 indicate that they provide unsuitable habitat for farmland bird species such as skylark *Alauda arvensis* due to the use of this land as occasional pasture.

No evidence of farmland birds was observed within the Site as part of the Phase 2 faunal surveys (EcIA, 2022).

- 3.27 The Proposed Development will result in the loss of some of hedgerow H1 to facilitate Site access and this could potentially affect any nesting birds that may be present at the time of works. Accordingly, a number of safeguards in respect of nesting birds are proposed.
- 3.28 The Site will be enhanced for nesting and foraging birds through the creation of grassland meadows, woodland and orchard planting, scrub creation and scrapes and swales designed for wading birds. Additional installation of bird boxes will provide extra opportunities for nesting birds throughout the Site (details provided in the BEP, **Appendix 3**).

Otter

- 3.29 The majority of the Site is unsuitable for otter *Lutra lutra*, due to the extent of former agricultural fields. However, the River Loddon adjacent to the Site is considered to provide potential habitat for this species, forming a substantial watercourse for commuting and foraging, together with areas of bankside vegetation which provide potential opportunities for shelter.
- 3.30 No evidence of otter was found during the specific survey work undertaken in July and September 2019 (EcIA, 2022) and no evidence was found during the updated walkover in April 2024. As such, the Site is not considered to be of importance for this species, albeit potential remains for otter to make occasional use of the river adjacent to the Site as part of a wider foraging and commuting network. The river is to be enhanced as part of the Proposed Development, potentially creating new opportunities for this species.

Reptiles

- 3.31 No evidence for the presence of any reptile species was recorded at the Site during the survey work (EcIA, 2022). Therefore, the Site is not considered to be of importance for this species group and should not be a constraint for the Proposed Development.
- 3.32 The Site will be enhanced for reptiles through the creation and enhancement of species-diverse wildflower meadows, particularly near the river corridor and southern section of the Site. Additional installation of hibernacula will provide opportunities for sheltering and hibernating reptiles. These features will also provide opportunities for amphibians (details provided in the BEP, **Appendix 3**).

Water Vole

- 3.33 The habitats within the Site itself are generally unsuitable for water vole *Arvicola amphibius*, mostly comprising existing agricultural fields. However, the River Loddon and associated riparian corridor offers potential opportunities for this species.
- 3.34 No evidence of water vole was found during the specific survey work undertaken in July and September 2019, nor was evidence found during the update survey in April 2021 (EcIA, 2022). No evidence of this species was found during the updated walkover survey in April 2024. As such, the Site is not considered to be of importance for this species, albeit potential remains for water vole to make occasional use of the river adjacent to the Site. The river is to be enhanced as part of the Proposed Development, potentially creating new opportunities for this species.

Other Species

- 3.35 No evidence of any other protected, rare or notable mammal species was recorded within the Site during the Phase 2 faunal surveys (EcIA, 2022) or the updated walkover (April 2024). Notable mammal species likely to utilise the Site include hedgehog *Erinaceus europaeus*.
- 3.36 The desktop study returned background records of hedgehog within the surrounding area. The Site offers potential opportunities for this species, particularly within the hedgerows, woodland and taller areas of grassland. The majority of these areas are retained under the Proposed Development, with the grassland to the west of the Site to be enhanced through creation of a wildflower meadow. Hedgehog highways will also be incorporated into the Landscape Design Strategy.

4. MITIGATION PROPOSALS

- 4.1 Based on the findings of the EcIA (Aspect Ecology, 2022) the mitigation measures have been set out and described in **Table 2** below. Mitigation measures have been provided for the habitats and protected/notable species associated with the Site as well as species which may be present but not subject to specific detailed survey effort.
- 4.2 Should any protected species, for example bats, badgers, GCN, reptiles, nesting birds or hedgehogs be found on Site before or during construction, then a Suitably Qualified Ecologist (SQE) should be consulted immediately.
- 4.3 Funding for the Proposed Development and associated mitigation during construction will be provided through the Client. Future maintenance works will be provided by a management company funded through the Client.

Table 2: Summary of Mitigation and Enhancement Measures

Ecological Receptor	Mitigation	Enhancement
Bats	<u>During construction:</u> - Night work should be avoided wherever possible, and lighting used during construction must be directed away from commuting features, trees and suitable boundary features wherever possible. - Construction practices will follow best practice in terms of dust and noise control. - No construction or operational lighting should be directed at hedgerows or boundary trees, and upwards/outwards light spill should be minimised. If construction lighting is required near these features, it should be cowled and faced into the Site. Construction lighting near these boundary features should be turned off prior to dusk to minimise impacts upon commuting bats. - Directional lighting, for example reduced wattage lamps and louvres will be fitted to reduce night-time illumination. Lighting should be hooded where practicable to prevent up-lighting of the sky. Lighting proposals will be directly informed by the latest guidance available from the Bat Conservation Trust and other relevant bodies including the Institution of Lighting Professionals¹. Further details are provided in the Lighting Strategy (WLC, 2024). <u>Post construction</u> - Any exterior lighting during the operational phase should be minimised as far as possible, and follow best practice guidelines, for example use of LED luminaires (non-UV) using a warm white spectrum (<3000 Kelvin), peak wavelengths above 550nm and the use of hoods/baffles to reduce upwards light spill). Lux levels should be maintained within 0.5 lux of baseline levels as far as practical. Where possible, lighting should be limited to low height. - New lighting within the Proposed Development should be also directed away from the retained trees, tree lines, hedgerows, and woodland edges.	Enhancements include new scrub, woodland and tree planting, with additional enhancement of existing grassland habitat and re-establishment of hedgerows throughout the Site. Additional enhancement will include bat boxes to be installed on newly created buildings and retained trees (see Appendix 3 locations).

¹ Institution of Lighting Professional/BCT: www.batsandlight.co.uk/index.html

Ecological Receptor	Mitigation	Enhancement
Great Crested Newts (and other amphibians e.g. common frog, toad)	<u>Pre-Construction:</u> - Areas of the modified grassland and sections of hedgerow to be removed should be cleared in phases to reduce risk of disturbance, injury or death to amphibians and reptiles. Any areas of long vegetation will be strimmed initially to a height of 150mm. After a 5-day period this area is then to be strimmed to a height of 50mm before being soil stripped. - Suitable refugia present within the Site is to be searched and removed by hand. Any amphibians or reptiles captured as part of this will be relocated to a suitable habitat away from the construction area. - Should any great crested newt be encountered works must stop immediately and the Ecological Clerk of Works (ECoW) contacted for advice. <u>During construction:</u> - Any construction materials should be stored on raised pallets to prevent reptiles or amphibians seeking shelter underneath them. - Any trenches or deep pits within the Site to be left open overnight will be provided with a means of escape should an animal enter. This could be in the form of a roughened plank of wood placed in the trench as a ramp to the surface.	Grassland areas will be created through seed sowing and turf laying. In the western part of the Site, species rich grass seeding will be used to create a suitable refugia for amphibians and reptiles. Additional hibernaculum and refugia piles will be created as part of the proposed landscaping (see Appendix 3 for proposed locations).
Nesting Birds	<u>Pre-construction:</u> Any tree or hedgerow that needs cutting/clearing pre-construction should be cleared outside bird breeding season	Enhancements include swales and scrapes suitable for

Ecological Receptor	Mitigation	Enhancement
	(which runs from 1st March to 31st August). If working during this period is unavoidable, a check for nesting birds before clearance should be done by the ECoW. <u>During construction:</u> Should any evidence of nesting birds be found during construction, an SQE should be called immediately to provide advice on how best to proceed with works. The SQE will likely tape off sensitive areas with a suitable buffer if required and conduct regular nesting checks until any young have fully fledged.	wading birds, new scrub, woodland and tree planting, with additional enhancement of existing grassland habitat and re-establishment of hedgerows throughout the Site to promote opportunities for nesting and foraging. Additional enhancement will include bird boxes to be installed on newly created buildings and retained trees (see Appendix 3 locations).
Reptiles	<u>Pre-construction:</u> - General guidance for GCN and amphibians will also apply to the protection of reptiles. - Areas of grassland and introduced shrub should be cleared in phases as set out above for GCN and common amphibians.	Grassland areas will be created through seed sowing and turf laying. In the western part of the Site, species rich grass seeding will be used to create a suitable refugia for amphibians and reptiles. Additional hibernaculum and refugia piles will be created as part of the proposed landscaping (see Appendix 3 for proposed locations).

Lighting Strategy

- 4.4 The Lighting Strategy (WLC, 2024) has been produced in accordance with best practice and in consideration of the important ecological factors within the Site.
- 4.5 The notable habitats for bats as identified during the activity surveys were the River Loddon, the tree line separating fields F3 and F4 and the woodland strip adjacent to Muddlers Lane. No

lighting will be used within any part of the enhanced grassland field F2 to the west of the Site, ensuring that the river corridor remains unlit post-development.

- 4.6 The tree line and woodland will not be directly lit, however some light spill may occur from the lights positioned along the new and existing access roads. To prevent this, lights adjacent to these habitats must be cowled and directed downwards as much as possible. Both habitats will be unlit on one side, minimising the potential negative impact of light spill and ensuring these habitats can still be used by light-sensitive species, e.g. bats and hedgehogs.

5. ENHANCEMENTS FOR FAUNA

Wildlife Boxes

- 5.1 New cavity roost and nest features will be provided within the Proposed Development (for bats and birds, respectively) and are to be erected on newly created buildings and on retained trees. This provision will be delivered within the requirements of Outline Permission Condition 24 (Species Specific Enhancements) which requires the provision of a minimum of 100 bird and bat boxes across the Site.
- 5.2 The most suitable locations for these boxes are presented within the Biodiversity Enhancement Plan in **Appendix 3**; however minor amendments may be required by the ECoW.

Bird Boxes

- 5.3 A total of 59no Ibstock swift boxes (or similar type) and 18no are to be integrated into the fabric of the newly constructed buildings, with locations and positioning presented in the BEP.
- 5.4 In addition, 5no Schwegler 2GR bird box (or similar type) will be affixed to suitable retained trees.
- 5.5 Two RSPB barn owl boxes (or similar type) will be installed on suitable retained trees at the Site, with locations and presented in the BEP. It is recommended boxes are installed on T39 and T42 (as per the Tree Survey Schedule within the Arboricultural Impact Assessment) which are Category A London Planes. The nest boxes will be installed via adjustable straps, as opposed to fixing with screws or nails.
- 5.6 The hole of the nest boxes must be positioned so that they are visible to any barn owls flying nearby, and not blocked by foliage or branches. It may be necessary to remove lower branches blocking views or access to the nest box for barn owls prior to installation.
- 5.7 Each barn owl box must be placed at least 3-metres from ground level.

Installation

- 5.8 To maximise their potential use, the bird box will be sited in sheltered, wind-free areas. Each box should be fixed 3-5m from ground level facing north, north-east, or north-west positions and out of direct sunlight for most of the day to avoid chicks overheating.
- 5.9 The birds should be given a clear flight path to the nest boxes without tree clutter close to the entrance.
- 5.10 Care will be taken in the placement of external lighting to ensure that no lights are placed near the entrance/exit points of the new nest sites.

Bat boxes

- 5.11 A total of 73no Ibstock 'C' type bat box are to be integrated into the fabric of the new buildings within the Site, providing new roosting opportunities for bats, including Priority Species such as soprano pipistrelle *Pipistrellus pygmaeus* and noctule *Nyctalus noctula*. Locations and positioning are presented in the BEP.
- 5.12 In addition, 6no Schwegler 2F bat box (or similar type) will be affixed to suitable retained trees.

Installation

- 5.13 Each bat box is to be strategically located to maximise its potential usage and will be installed as high up as possible (minimum of 4m) facing either a southerly, south-easterly, or south-westerly direction so that they gain exposure to the sun for at least part of the day. There should be a clear flight path for bats emerging and re-entering each box.

Long-term Maintenance

- 5.14 Annual visual inspections from the ground will be undertaken for the bird and bat roosting features to ensure they remain in good condition and as such do not pose a health and safety risk, whilst continuing to offer suitable opportunities for the relevant protected species.
- 5.15 Bat and bird boxes will not be subject to artificial illumination post-development.
- 5.16 Inspections of bird boxes will be conducted outside of the bird nesting season (March-August inclusive) and any damaged boxes will be replaced. Cleaning of the bird boxes may be undertaken by clearing out old nesting material and washing in hot water during the winter months (ideally October/November). It should be noted that bats can often occupy bird boxes so extra care should be taken when removing the fronts of the boxes to clean them.

Swift Box - Clay - Smooth Cream



Figure 3: Ibstock Swift Box



**Smooth Gold Large
215 x 290 mm**

Figure 4: Ibstock 'C' Type Bat Box



**Figure 5: Schwegler 2GR
Bird Box**



Figure 6: Schwegler 2F Bat Box



Figure 7: RSPB Barn Owl Nest Box

Insect Boxes

- 5.17 Nine insect houses suitable for solitary bees are to be installed within areas of wildflower meadow grassland, adjacent to the SuDs attenuation basin (as presented in the BEP). These features will provide new nesting spaces for solitary bee species such as red mason bee *Osmia bicornis* and leafcutter bee *Megachilidae spp.*
- 5.18 A total of 39no insect bricks will be integrated into the fabric of the new buildings to create additional opportunities for solitary bees. These should be positioned at 1m in height on south, south-east or south-west facing elevations and close to vegetation and food sources where possible. Vegetation should not block access to the nest holes. Locations and positioning are presented in the BEP.

Installation

- 5.19 The insect houses are to be placed at a height no more than 1m with no vegetation obstructing the holes. Bee-friendly plants such as lavender *Lavendula spp.* and dog rose *Rosa canina* should be located nearby as a food source, as per the Landscape Design Strategy.

Long-term Maintenance

- 5.20 Annual visual inspections will be undertaken to ensure the insect boxes remain in good condition and are not being utilised by unwanted insect species (such as common wasps *Vespula vulgaris*).
- 5.21 Insect houses should be replaced after approximately 5-7 years when the box materials become worn, and to avoid the build-up of bacteria and diseases.



Figure 8: Example Schwegler Insect Nest Box for 'Insect House'

Habitat Piles

- 5.22 A total of 7no hibernacula will be included within the development to increase the value of the Site for reptiles, amphibians and small mammals such as hedgehogs. Locations are presented in the BEP.

Installation

- 5.23 Hibernacula are to be installed within areas of long grass vegetation and near Site boundary features. The hibernacula are to be located in sheltered areas which are neither too dry nor prone to winter flooding or freezing. They are to be located on free draining soil and by excavating an appropriate pit or trench and infilling with a mixture of topsoil, rubble, logs and brash. This will be covered by more logs, rubble and brash and earth and topped with turf (on Site turf will be used to form the top layer; removed during the excavation of the new SuDS attenuation basins and swales). Dimensions will not be below 2m in length x 2m in width x 1m in height (see **Figure 8** for an example).

Long-term Maintenance

- 5.24 Annual visual inspections will be undertaken for the habitat piles to ensure they remain in good condition and as such do not pose a health and safety risk, whilst continuing to offer suitable opportunities for the relevant protected species.
- 5.25 Habitat piles are to be replaced/topped up if damaged or missing after being installed. This check should take place in late March or April, (outside of the reptile/amphibian hibernation and egg-laying period).

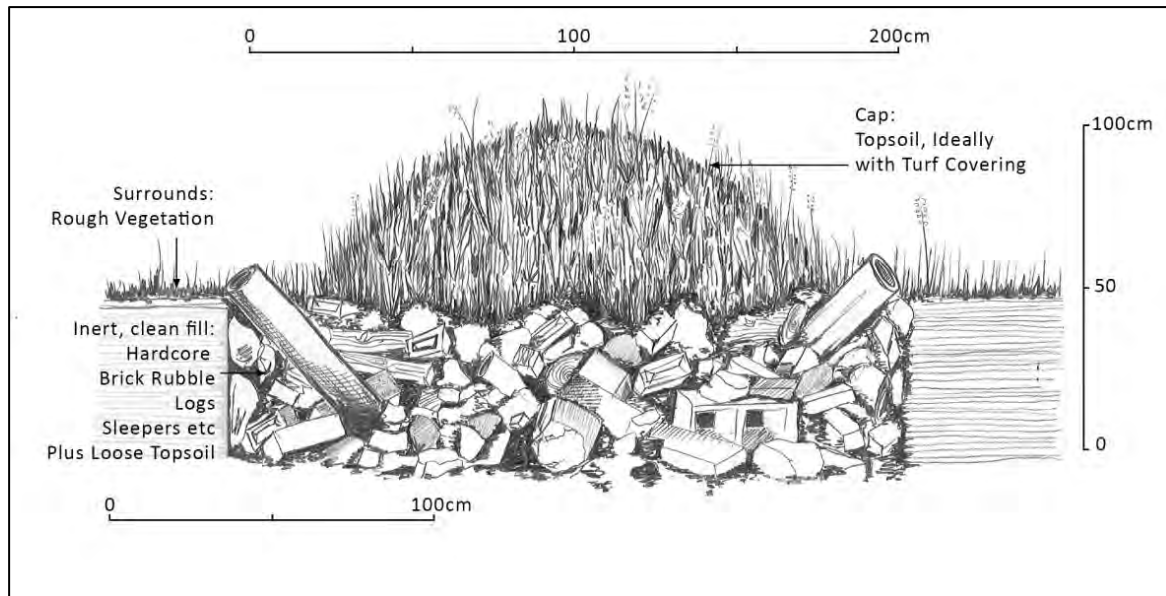


Figure 9: Hibernaculum specification

Hedgehog Highways

- 5.26 Areas of wildflower meadows, hedgerows and Site boundaries are to be maintained as functional commuting habitat for hedgehogs. Features including the hibernacula will provide additional refugia opportunities for hedgehogs utilising the Site.
- 5.27 To support connectivity opportunities for hedgehog throughout the Site, gaps will be created in any fence-lines to be installed as part of the Proposed Development. Gaps will measure 130mm by 130mm to ensure small mammal species can have unobstructed access. Signage will be affixed near gaps within the fencing to inform residents to keep these features open and accessible.

Long-term Maintenance

- 5.28 Habitats on the Site boundaries, including the hedgerows, new and existing woodland and parts of new wildflower meadows should be left unmanaged for most of the year to reduce disturbance to hedgehogs.
- 5.29 Clearance and management of habitats within the hedgehog highway should be undertaken in September/October, outside the hibernation period for hedgehogs and when most hedgehog hoglets have matured.

6. MONITORING

Landscaping

- 6.1 Monitoring must occur on a schedule of years 1, 2, 5, 10, 15, 20, 25, 30 following completion of the construction phase of works (as detailed in the LEMP, Nicholsons 2024).

Ecological Receptors

- 6.2 Key ecological receptors identified to date include:

- Bats;
- Nesting birds;
- Badgers;
- Hedgehogs;
- Otter and Water Vole;
- Reptiles; and
- Invertebrates

- 6.3 The ECoW will make short annual visits to the Site for years 1-5 post-construction in order to check (i) take-up of bat and bird boxes (ii) development of shrub planting and (iii) in June success (or otherwise) of the grassland. This is likely to be an iterative process but a framework for this is presented in the **Table 3**.

- 6.4 Following the visits, the ECoW will issue a letter to the Client describing progress of the mitigation measures and (if needed) setting out any management changes that might need to be implemented in order to achieve landscape and biodiversity aims, as set out in this document.

Table 3: Ecological Enhancements Management Plan

Habitat and Detail	Management Methods to Achieve Condition	Management Schedule	Monitoring Methods
Bird boxes	Make repairs or replace boxes as necessary. Clearing out of old nest material to reduce risk of spreading diseases.	Check box condition every 2 years outside of nesting bird season in November or December . Clean out boxes every year in November or December .	To be undertaken during the summer months by a suitably licensed person i.e. licenced by the BTO as part of the Nest Recording Scheme.
Bat boxes	Make repairs or replace boxes as necessary.	SQE to check box condition every 2 years outside of main breeding season. This must be done by a licensed bat ecologist.	Check every 2 years during the winter months . In the event any hibernating bats are recorded, discuss with a licenced bat ecologist.
Hibernacula	Fix any broken, dismantled or fallen piles. Top up piles with arisings from grassland, scrub, tree and hedgerow management.	Site management team to fix hibernacula only in September or October to avoid the breeding/hibernating seasons for amphibians and reptiles. Piles can be topped up with vegetation throughout the year, where required.	Check every year in September or early October , outside of the reptile and amphibian hibernation and breeding period.
Insect boxes	Make repairs or replace boxes as necessary. Clearing out of old nest material to reduce risk of spreading diseases.	Site management team to inspect annually in early Spring . Clean out boxes every two years in March or April . Replace after 5-7 years usage where necessary.	Site management team to inspect in Spring every year .

7. ROLES AND RESPONSIBILITIES

- 7.1 This document has been completed in agreement with Croudace Homes “the Client”. As such they, with the support from specialist contractors, will be responsible for the delivery of the information prescribed within this document. The Client will be responsible for appointing the Site Manager, ECoW and Maintenance Contractor as detailed below.

Site Manager

- 7.2 It is understood that the day-to-day management of the development until completion will sit with the appointed Site Manager.

- 7.3 The Site Manager’s responsibilities include:

- Acting as a champion across all areas of environmental management;
- Ensuring the effective implementation of the LEMP, BEP and Ecological Permeability Report through the availability of appropriate resources and to ensure all legal requirements are delivered;
- If any amendments need to be made, ensure they are agreed in writing with the LPA;
- Manage all necessary documentation to demonstrate compliance with the appropriate legislation for the required period;
- Ensure necessary training is given to personnel to ensure necessary levels of environmental competence;
- Ensure correct procedures are followed in case of an environmental accident; and
- Ensure that the LEMP, BEP and Ecological Permeability are implemented on Site on a regular basis (taking into account seasonal constraints).

Ecological Clerk of Works (ECoW)

- 7.4 Ahead of works commencing, an ECoW is to be appointed by the Client, who will provide independent advice to the Principal Contractor. The ECoW will be responsible for:

- Ensuring the detail presented within the LEMP, BEP and Ecological Permeability report are communicated to the Principal Contractor;
- Completion of a toolbox talk to the Principal Contractor prior to works commencing;
- Preparation of materials to support Site inductions;
- Pre-construction and construction phase checks for protected species, as required;
- Provision of an ecological watching brief during vegetation clearance works; and
- Regular record keeping and production of reports, as required, for auditing purposes.

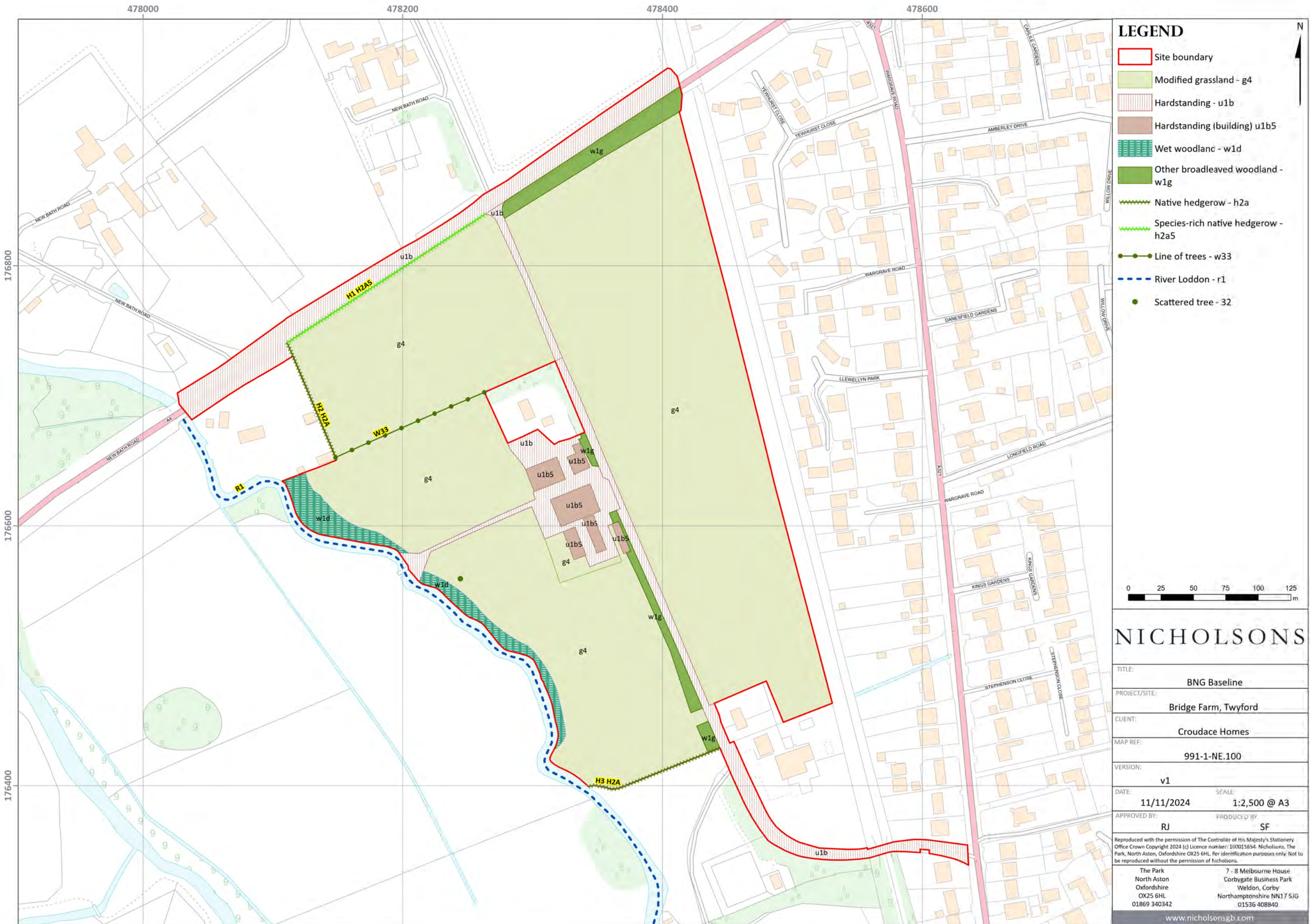
Maintenance Contractor

- 7.5 The Maintenance Contractor will be responsible for ensuring the establishment, aftercare and long-term management of the retained and newly created habitats and installed ecological enhancements within the Site are undertaken in accordance with the prescriptions at **Section 5**.

8. APPENDICES

Appendix 1: Baseline Habitat Plan

Ref: 991-1-NE.100-BNG Baseline v1 SF 111124



Appendix 2: Landscape Masterplan

Ref: CH038-002H_Lscape_MplanLR

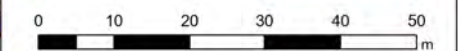
Appendix 3: Biodiversity Enhancement Plan

Ref: 221124 991-1-NE.103-Biodiversity Enhancement Plan v3 SF 131224



LEGEND

- Site boundary
- Barn Owl Nest Box (x1)
- Ibstock 'C' type Bat Box (or similar type) integrated into fabric on new building (x21)
- Ibstock Swift bricks (or similar type) integrated into fabric of new building (x16)
- Insect brick (x4)
- Insect hotel (x1)
- Swallow cups (x4)



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PROJECT/SITE: Bridge Farm, Twyford	
CLIENT: Croudace Homes	
MAP REF: 991-1-NE.103	
VERSION: v3	FIGURE NUMBER: 1/4
DATE: 13/12/2024	SCALE: 1:1,000 @ A3
APPROVED BY: EW	PRODUCED BY: SF

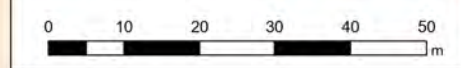
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- LEGEND**
- Site boundary
 - Ibstock 'C' type Bat Box (or similar type) integrated into fabric on new building (x24)
 - Ibstock Swift bricks (or similar type) integrated into fabric of new building (x21)
 - Insect brick (x22)
 - Insect hotel (x1)
 - Reptile hibernacula (x1)
 - Swallow cups (x6)



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CLIENT: Croudace Homes

MAP REF: 991-1-NE.103

VERSION: v3

FIGURE NUMBER: 2/4

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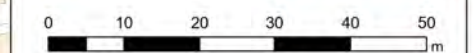
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LEGEND

-  Site boundary
-  Ibstock 'C' type Bat Box (or similar type) integrated into fabric on new building (x23)
-  Ibstock Swift bricks (or similar type) integrated into fabric of new building (x17)
-  Insect brick (x13)
-  Insect hotel (x2)
-  Reptile hibernacula (x2)
-  Swallow cups (x8)



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VERSION:		v3	
DATE:		13/12/2024	
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