

Ecological Design Strategy

For:	Ms Lauren Clarke
Site	Land adjacent to 81 Common End Lane, Lepton, Huddersfield HD8 0AF
Report Date:	2 November 2020
Report Reference:	LC.CE.6.2020

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Client:	Ms Lauren Clarke
Site Name:	Land adjacent to 81 Common End Lane, Lepton, Huddersfield HD8 0AF
Grid Reference:	SE 18734 15158
Report:	Ecological Design Strategy
Date of survey:	2 November 2020
Planning Application:	2020/62/91092/W Kirklees Council
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Whilst every effort has been taken to ensure the accuracy of this report and its contents in view of potential ecological constraints to development or the likely presence or absence of species it must only be viewed as a snap shot in time and therefore not be viewed as definitive. Due to external factors, such as seasonality, weather etc. having the potential to affect survey results no liability can be assumed for omissions or changes that may or may not occur after the date this report was produced.

1 Introduction and Background to the Site

- 1.1 Estrada Ecology Ltd was commissioned by Lauren Clarke to prepare an ecological design strategy (EDS) to satisfy planning conditions relating to application number 2020/62/91092/W (Kirklees Council).
- 1.2 The site consists of a residential dwelling, small areas of hardstanding and bare ground and a small parcel of species poor amenity grassland which currently forms the garden of number 81 Common End Lane.
- 1.3 The site lies approximately 4.75 Kms south east of the city of Huddersfield in the suburb of Lepton. The central grid OS grid reference is SE 18734 15158.
- 1.4 Outside the northern boundary the landscape is dominated by residential housing and road networks. To the immediate south is a linear belt of deciduous woodland, some of which is under the ownership of the applicant with residential housing beyond. The east and western aspects beyond the site boundary are dominated by residential housing.
- 1.5 Condition 4 of the planning application states:

Prior to the hereby approved dwelling being first brought into use an ecological design strategy (EDS) addressing mitigation and enhancement has been submitted to and approved in writing by the local planning authority. The EDS shall include the following.

a) Purpose and conservation objectives for the proposed ecological works.

b) Location (shown on appropriate scale plans) of specific make and model, or design, of habitat boxes, such as bat boxes, bird boxes and hedgehog refuges. Habitat boxes to be integral to new structures where appropriate.

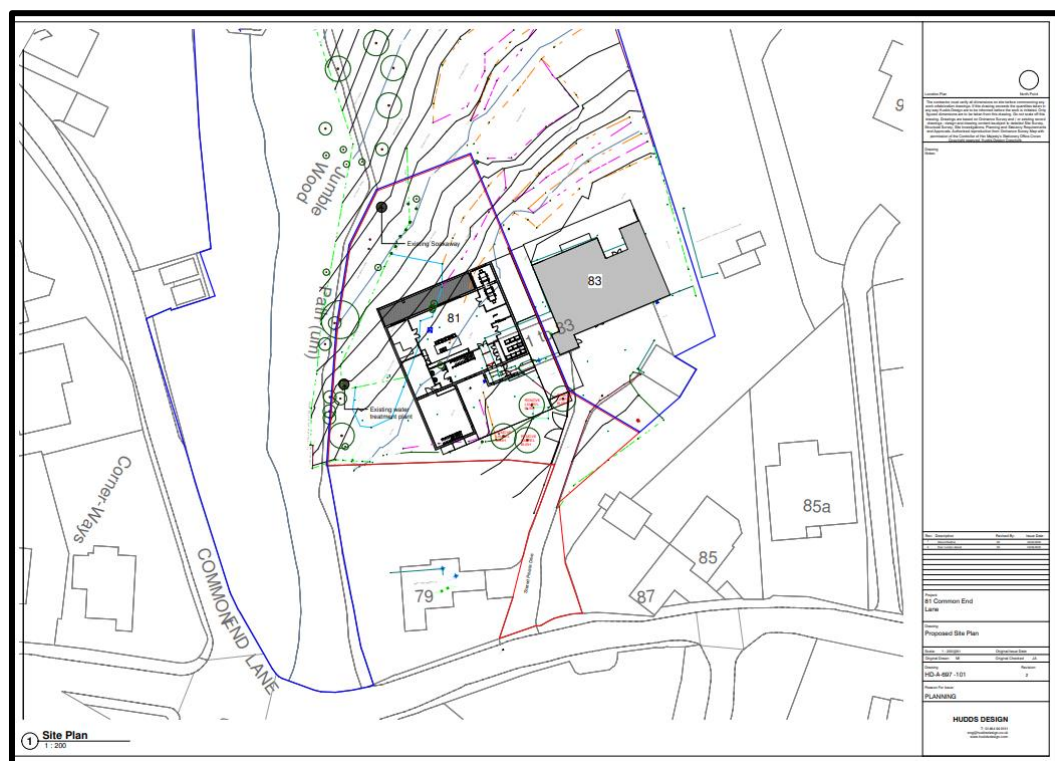
c) Details of how lighting design will not impede the function of the adjacent Kirklees Wildlife Habitat Network.

d) Details of how the design of boundary treatments will not obstruct the movement of hedgehogs.

e) Planting schedule and planting plan showing the inclusion of native species of tree and shrub to be included within/at the boundary of the application area, and how this achieves the stated purpose.

f) Details of maintenance.

Figure 1: Proposals for the site



HUDDS Design

2 Purpose and conservation of the proposed ecological works

- 2.1 The purpose of this strategy is to set out a framework for enhancing biodiversity and managing post development habitats on land at 81 Common end Lane, Huddersfield.
- 2.2 Mitigation enhancement associated with the Preliminary Ecological Appraisal survey and the biodiversity plan will ensure that the development impacts positively on the surrounding environment.
- 2.3 The aim of the strategy is to focus attention on sustainable ecological management, maintenance and enhancement of the wildlife value of the site.

3 Summary of works

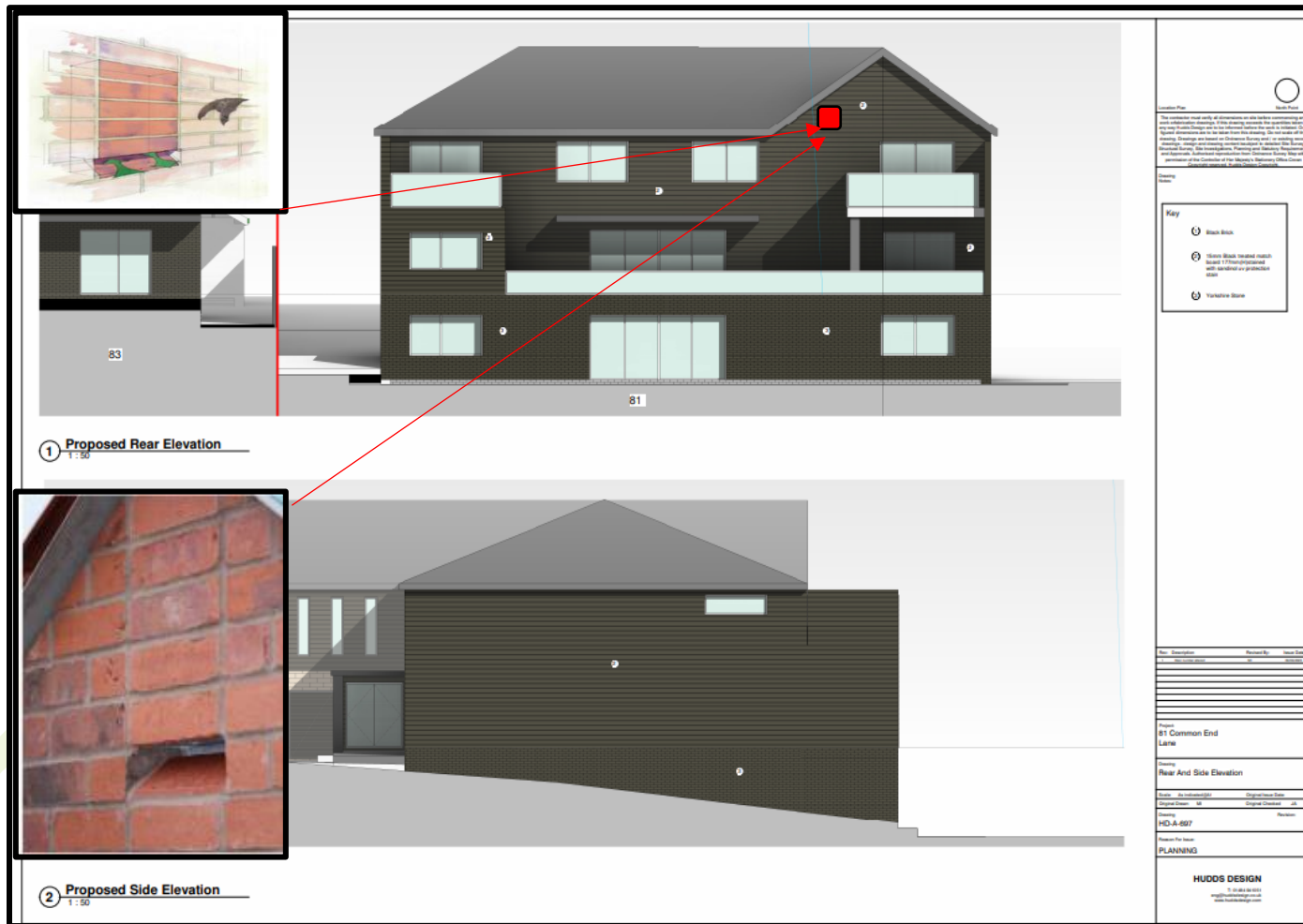
- 3.1 Prior to commencement of works, all retained trees are to be protected to BS.5837 (2012), Trees in relation to Design, Demolition & Construction.
- 3.2 Where feasible, no tree work or vegetation removal should be undertaken until the bird nesting season is completed, (March - September inclusive).
- 3.3 Should construction works on the site be undertaken within the breeding bird season, which typically runs from March to September inclusive (the peak period is generally recognised as being March to July), a walkover survey to ensure no breeding bird activity is present should be conducted. Should nests or breeding behaviour by parent birds, including nest building be recorded, then a suitable buffer zone should be deployed around the nest site to minimise disturbance.
- 3.4 Should construction works be undertaken outside the breeding bird season (October to February, inclusive) then no impacts are predicted, and no formal mitigation is advised.
- 3.5 All potential refuges including topsoil and scrub should be stripped during the activity season for amphibians and reptiles (typically mid-March- Mid October during suitable weather conditions).

- 3.6 Upon completion of building works artificial refugia will be installed according to the Ecological Design Strategy including:
- 2 x Bat boxes, Habibat or similar (building integrated)
 - 6 x Six Vivaro pro Woodstone sparrow nests
 - 2 x Invertebrate boxes
- 3.7 All ecological refugia should be installed on completion of building works. Locations are outlined herein.
- 3.8 At all times during construction: Mammal ladders should be placed in all open trenches that cannot be covered at night by plywood sheeting to allow mammals to exit trenches. (Planks of wood are usually enough such as scaffolding planks laid at no more than 30°).
- 3.9 New native tree planting to replace any trees scheduled for removal.



4 Biodiversity Enhancements

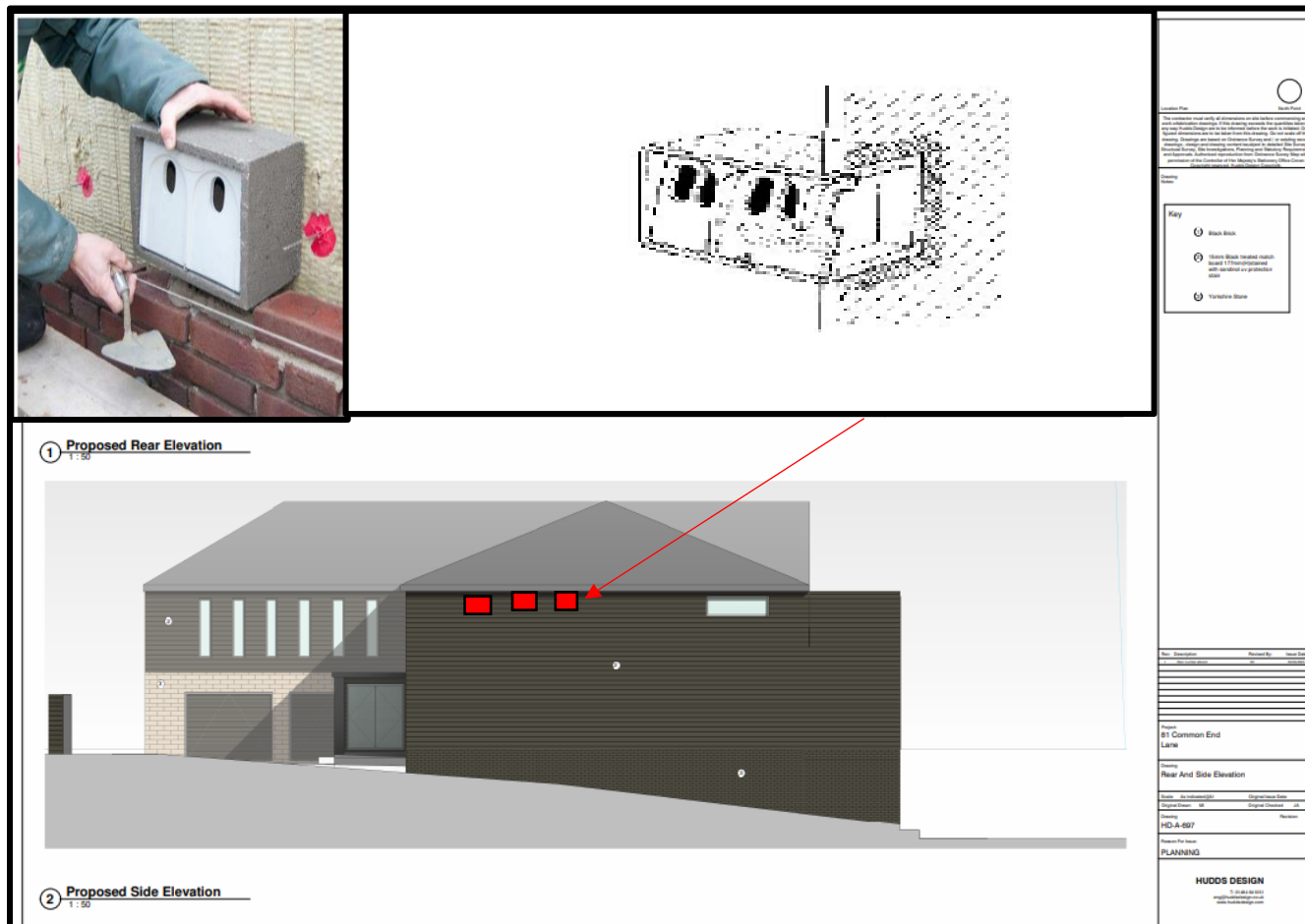
Figure 2: Proposed location of two Habitat bat boxes (southern elevation)



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Figure 3: Proposed location of six Vivaro Pro Woodstone house sparrow boxes (eastern elevation).



4.1 Breeding birds

4.1.1 House sparrow (*Passer domesticus*)

4.1.2 The current UK population of 6 million pairs is half what it was in 1980. Monitoring suggests a severe decline in the UK house sparrow population, recently estimated as dropping by 71% between 1977 and 2008, with substantial declines in both rural and urban populations (RSPB, no date).

4.1.3 House sparrows are social birds preferring to nest in colonies. To encourage use of the site by house sparrow six Vivara Pro Woodstone house sparrow nest boxes should be erected in pairs on the eastern elevation adjacent to each other, as highlighted in Figure 3.

4.1.4 The eastern elevation of plots provides protection against the strongest sunlight and wettest winds.

4.1.5 The house sparrow nest boxes should be integrated into the masonry as highlighted in figure 3. The Woodcrete mix is durable and if integrated correctly is likely to last the lifetime of the building.

4.2 Bats

4.2.1 To enhance roosting opportunities for bats, it is proposed that two Habibat bat boxes (custom facing) are erected, adjacent to each other on the southern elevation of the new property as outlined within Figure 2.

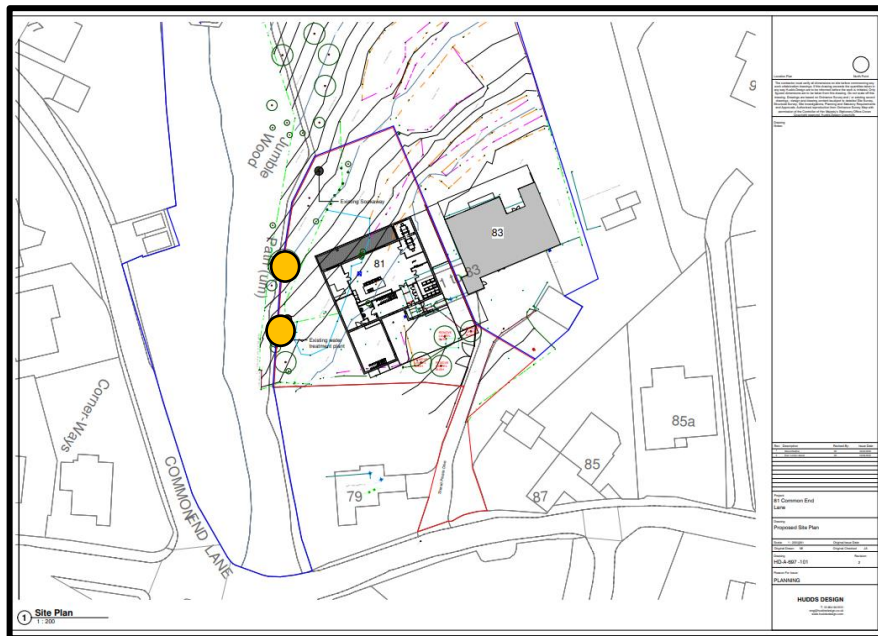
4.2.2 The Habibat bat box is a large, solid box made of insulating concrete with an internal roost space, which can be incorporated into the fabric of a building as it is built. This bat box is well insulated providing consistent temperatures and contains a single narrow cavity, so can be used throughout the year by crevice-dwelling species of bat (NHBS, No Date).

4.2.3 The boxes require no ongoing management and are self-contained. Droppings are released via the access panel. Being durable and integrated, it is expected that the boxes will be in situ for the lifetime of the buildings.



- 4.2.4 The box should be erected at a height of at least 3 metres high, directly under the eaves, to provide suitable height to prevent grounding and predation by cats. Locations directly above doors and windows should be avoided to minimise dropping release onto windows and doors below.
- 4.2.5 The flight path to the boxes should not have any light overspill in the vicinity which could deter bats from using the boxes. No vegetation should be allowed to grow that could impede the flight line to the integrated boxes.
- 4.3 Invertebrates**
- 4.3.1 To provide enhancements for invertebrates two invertebrate boxes will be erected as per figure 4. One Woodstone insect block and one insect tower are proposed. Both boxes are commercially available from Nhbs.com.
- 4.3.2 The boxes should be erected on retained trees on the south eastern elevation of the plot.

Figure 4: The proposed location of invertebrate boxes on retained vegetation.



5 Lighting Scheme

- 5.1 Illuminating habitat used for foraging and commuting bats can affect the way bats respond to features in the landscape. Artificial light can act as a barrier to bats and disrupt flight paths of some species.
- 5.2 Different species of bats have differing light tolerances when commuting and foraging, with bat species that emerge later in the evening such as *Myotis* or *Plecotus* species being more sensitive to increased light levels (Stone, 2014). Species such as *Pipistrellus*, *Nyctalus* and *Eptesicus* are thought to be less affected.
- 5.3 It has also been shown that insect prey can be attracted to artificial lighting drawing insects away from their natural habitat creating a 'vacuum effect' (Eisenbeis, 2006), disadvantaging light sensitive bat species and leading to a competitive advantage of those species able to take advantage of artificially lit areas (Artettaz, et al., 2000 and Davies, et al 2012).
- 5.4 Lighting causes direct mortality of insects and gives bats a competitive advantage over insect prey, such as moths, which are attracted to lights changing the predator prey relationship (Svensson & Rydell, 1998).
- 5.5 Consultation with the applicant confirms that no artificial lighting within the wider site is proposed other than a simple domestic arrangement to illuminate the house.
- 5.6 No artificial lighting should be installed upon the southern aspect of the new residential dwelling to avoid potential disturbance to the proposed integrated bat boxes.

- 5.7 Where lighting will be installed on the exterior of the buildings for health and safety / security reasons, light intensity should be as low as is permissible. All luminaires used within the lighting scheme should be LED which provide a lower intensity. A warm white spectrum (ideally <2700 Kelvin) should be adopted to reduce the blue light component with a wavelength exceeding 550nm. External lighting should be as directional as possible with the luminaire angled sharply downwards illuminating just the intended source and thus avoiding splay over a wider area.

Figure 4: Summary of predicted impacts of lighting for each species/group according to bat behaviour, to be used as guidance only. Source: Bats and Lighting: Overview of current evidence, Stone, 2013.

Impact Behaviour	High	Medium	Low
Maternity roost	All species	-	-
Night roost	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>	-
Emergence	All species	-	-
Foraging	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Commuting	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Swarming	All species	-	-
Hibernation	All species	-	-

- 5.8 Any external security lighting should be set on motion-sensors and short (1min) timers. All luminaires should always be mounted on the horizontal, eliminating upward tilt and splay.
- 5.9 Should exterior lighting be required at ground level for health and safety reasons then Wayfinding lighting should be used. Low level wayfinding lighting (max. height 1.2m) with low glare fittings, will ensure no light is emitted above the horizontal plain, non-reflective substrates should be used beneath to reduce light intrusion onto habitats likely to be used by bats for commuting and foraging outside the immediate development boundary.
- 5.10 During construction and general site works, artificial lighting should not be used between thirty minutes before dusk and thirty minutes after sunrise or during sensitive foraging or commuting times from April-September.
- 5.11 It is anticipated that there will be negligible/very low impacts on Jumble wood through the loss of foraging/commuting habitat as a result of the proposed development and the minimal external lighting proposed.

6 Boundary Treatments

- 6.1 Land to the south of the site outside the application boundary is within ownership of the applicant. Consultation confirms that no formal boundary treatments are to be installed and the boundary to the south and east of the plot is to remain open. This will allow unimpeded passage for terrestrial fauna (including hedgehogs) between the application site and woodland beyond.
- 6.2 Should fencing be erected around the remaining areas of the site, it is recommended that alternate panels are raised to provide a four-inch gap, allowing access for small mammals, such as European hedgehog (*Erinaceus europaeus*) to disperse into the site and beyond; into land and gardens located on the eastern, western, and southern elevations.
- 6.3 Alternatively holes can be cut in wooden fence panels at ground level or gravel boards. An arch shape, no more than about 15cm wide x



12cm high, is adequate for hedgehogs. These should be installed in every alternate fence panel.

Figure 5: Examples of hedgehog highways.



(Suffolk Wildlife Trust, No Date; Jacksons Fencing, 2017)

7 Planting Scheme

- 7.1 Landscaping or plantings will be native flowering / fruit bearing species; this should attract pollinators and other insects which act, in turn, as food for bats, birds and other wildlife.
- 7.2 Two field maple (*Acer campestre*), two wild cherries (*Prunus avium*) and two Rowan (*Sorbus aucuparia*) will be planted along boundary features around the site. All specimens should be 10L pots.
- 7.3 The boundary (southern elevation) of the garden of the newly converted dwelling will be sown with a 100% native wildflower seed mixture, such as Meadowmania (MAS WWILD D1), which comprises eleven species to create a wildflower buffer strip. The strip should be no less than two metres in width. The species composition is highlighted in table 1.

Table 1: Species composition and sow rate (MAS WWILD D1).

Species	Sow Rate
Corn Poppy (<i>Papaver rhoeas</i>) 10.0%, Cornflower (<i>Centaurea cyanus</i>) 16.0%, Meadow Buttercup (<i>Ranunculus acris</i>) 7.0%, Musk Mallow (<i>Malva moschata</i>) 1.0%, Ox Eye Daisy (<i>Leucanthemum vulgare</i>) 12.0%, Red Campion (<i>Silene dioica</i>) 12.0%, Ribwort Plantain (<i>Plantago lanceolata</i>) 12.0%, Salad Burnet (<i>Sanguisorba minor</i>) 12.0%, Self-heal (<i>Prunella vulgaris</i>) 10.0%, White Champion (<i>Silene alba</i>) 3.0%, Yarrow, (<i>Achillea millefolium</i>) 5.0%	1.5 grammes per square metre.

- 7.4 The remaining lawn of the new dwelling should be sown with a flowering lawn mixture, such as Emorsgate Seeds EL1 – Flowering Lawn Mixture. The mixture responds to regular, short mowing.

Table 2: Species composition and sow rate of EL1 Lawn Mixture.

Species	Sow Rate
Lady's Bedstraw (<i>Galium verum</i>)	4 grammes per square metre
Rough Hawkbit (<i>Leontodon hispidus</i>)	
Oxeye Daisy (<i>Leucanthemum vulgare</i>)	
Birdsfoot Trefoil (<i>Lotus corniculatus</i>)	
Cowslip (<i>Primula veris</i>)	
Selfheal (<i>Prunella vulgaris</i>)	
Meadow Buttercup (<i>Ranunculus acris</i>)	
Common Sorrel (<i>Rumex acetosa</i>)	
Wild Red Clover (<i>Trifolium pratense</i>)	
Common Bent (<i>Agrostis capillaris</i>)	
Crested Dogstail (<i>Cynosurus cristatus</i>)	
Slender-creeping red-fescue (<i>Festuca rubra</i>)	
Smaller Cat's-tail (<i>Phleum bertolonii</i>)	

7.5 Timings

Table 3: Timings.

Timing	Action	Management
Winter 2020/ Spring 2021	Install bat and bird boxes	N/A
Spring 2021	Plant lawn and wildflower grass seeds	Mow newly sown flowering lawns regularly (every 7 -10 days during growing season) throughout the first year of establishment. Cut to a height of 40-60mm, removing cuttings if dense.
Winter 2020 / Spring 2021	Install hedgehog highways in boundary features	
Early Spring 2021	Plant 2 x Rowan 2 x Field Maple 2 x Wild cherry	Install rabbit guards to protect growth

8 Conclusions and Recommendations

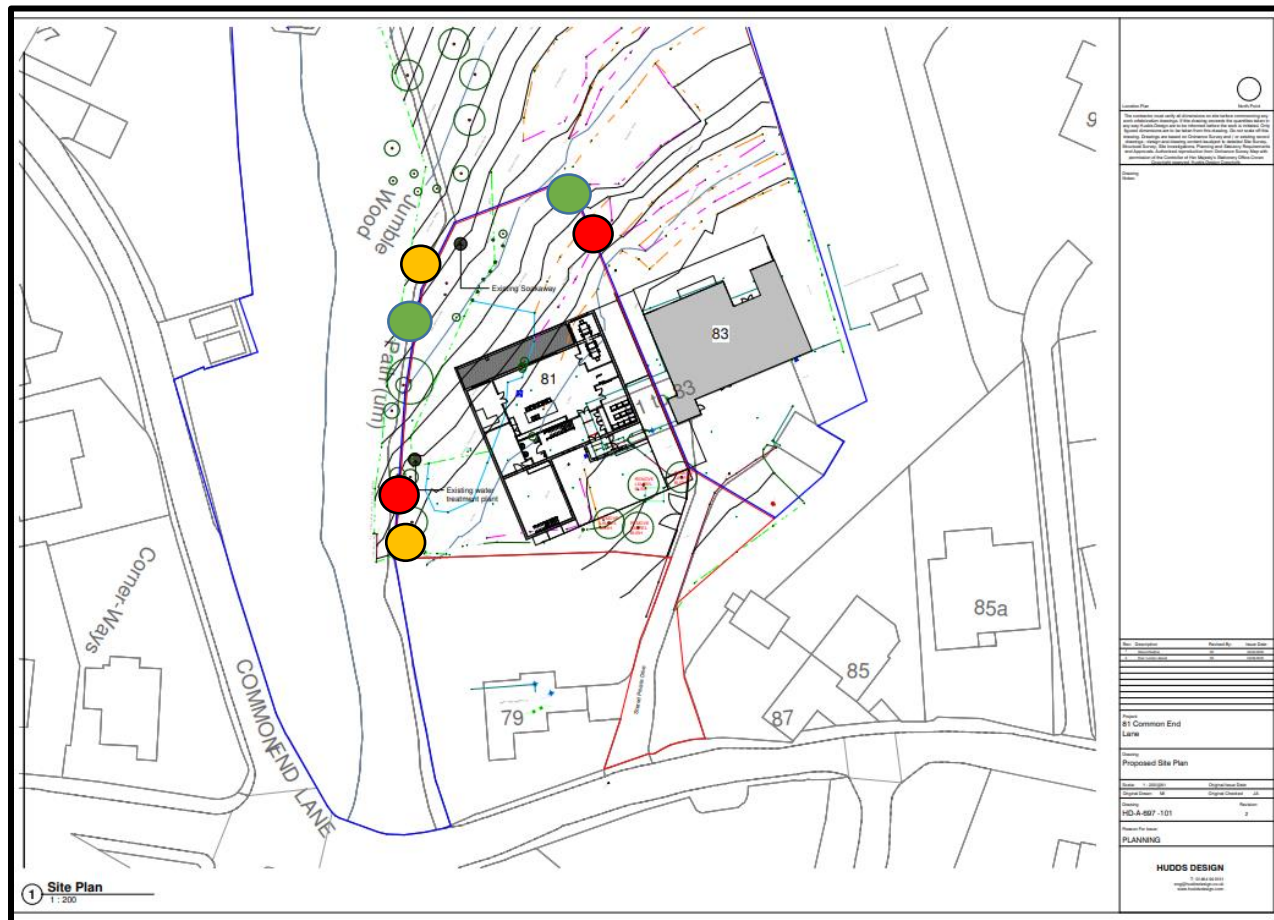
- 8.1 As a general biodiversity enhancement measure, all codes of good practice for wildlife should be undertaken whilst development is underway on the site. For example, trenches should be covered or, where left open, ramps provided for hedgehogs and other small mammals to use as a means of escape.
- 8.2 If the recommendations outlined in this report are followed, then it is envisaged that there should be an enhancement in the overall biodiversity of the site.

Table 4: Management Actions Area.				
Area	Objective	Rationale	Timing	Cycle
Sow Lawn mixture in lawns and wildlife mixture in boundary buffer areas	To increase ecological value of the site and encourage pollinators.	To increase ecological value of site and encourage pollinators.	March to Mid-October.	Year 1 and leave to establish. Cut sporadically from March to September in Years 2 to 5 to encourage flowers to bloom and set seed for the following year. Monitor condition annually. Replace mix in Year 5 if required.
Mow any existing amenity grassed areas	To increase ecological value of the site and encourage pollinators.	To increase ecological value of site.	Twice per year (spring and end of summer) when flowers have set seed.	Bi-annually Years 1 to 5. Remove cuttings.
New tree planting	Plant as outlined on the Landscaping scheme	Increase ecological value of the site	September to February	Install tree guards in Year 1 and monitor growth in Years 2, 3 and 4. Replace any failed trees.
Avoid use of artificial fertilisers and chemicals	Adopt ecological ground care practices.	To ensure ecological continuity of the site.	All year round.	Annually, Years 1 to 5.



Table 4: Management Actions Area.				
Area	Objective	Rationale	Timing	Cycle
General upkeep and maintenance	Emphasis should be placed on planting native species. Felling / pruning works should be undertaken outside the breeding bird season. The breeding bird season is typically recognised as March- September inclusive. .	To ensure health of plants and increase ecological value of the site	All year, every year.	Ongoing.

Appendix One: Planting Plan



- Rowan ●
- Wild Cherry ●
- Field Maple ●

References and Bibliography

Jacksons Fencing (2017). Help the Hedgehogs. Hedgehog Fencing. Available at: <https://www.jacksons-fencing.co.uk/hedgehog-fencing> [Accessed 12 October 2018].

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