

Ecology and Biodiversity Net Gain Report

At:

Cobham Lodge,
Valley Drive,
Gravesend,
Kent,
DA12 5UE

For:

Milestone Civil
Engineering Ltd

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Association of Geotechnical &
Geoenvironmental Specialists



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Environmental
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Executive Summary

EHM Ltd has been commissioned to carry out a Biodiversity Net Gain (BNG) assessment of a domestic property near Gravesend Kent. Following advice from Kent County Council Ecological Advice service this report will provide the following aspects;

- Potential Impacts to Ancient Woodland
- A sensitive external Lighting Plan
- A native species Landscape Plan
- A Construction Environment Management Plan (CEMP)
- Bat scoping survey
- Biodiversity Net Gain Assessment



BNG Results

The headline results of the DEFERA Matrix 3.1 calculations are shown below. More detailed results are available in the appendix. As can be seen the on-site net change in Habitat units is almost a 10% gain. The hedgerow units have increased by over 20% this is achieved by enhancing the line of trees on the southern edge of the site.

On-site baseline	Habitat units	1.52
	Hedgerow units	0.56
	River units	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	1.68
	Hedgerow units	0.69
	River units	0.00
On-site net % change (Including habitat retention, creation & enhancement)	Habitat units	9.13%
	Hedgerow units	23.04%
	River units	0.00%
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.14
	Hedgerow units	0.13
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	9.13%
	Hedgerow units	23.04%
	River units	0.00%
Trading rules Satisfied?	Yes ✓	

Recommendations

Following the bat scoping survey, BNG assessment, Landscape plan and CEMP a number of recommendations are made.

- Compile detailed biodiversity management plans
- Bat surveys of B1 if works required to roof
- Follow measures set out in CEMP
- Follow sensitive lighting plan
- Follow landscape planting plan
- Remove vegetation outside of nesting bird season

1. Introduction

EHM Ltd has been commissioned to carry out a Biodiversity Net Gain (BNG) assessment of a domestic property near Gravesend Kent. Following advice from Kent County Council Ecological Advice¹ service this report will provide the following aspects;

- Potential Impacts to Ancient Woodland
- A sensitive external Lighting Plan
- A native species Landscape Plan
- A Construction Environment Management Plan (CEMP)
- Bat scoping survey
- Biodiversity Net Gain Assessment

1.1 Development outline

EHM Ltd understands that the proposal are to develop 9 residential units and a block of 11 flats on the site.

1.2 Site Description and Context

A large residential property encompassing two houses located east and west of the site, a shed, 2 small metal containers and associated grounds. The majority of the grounds are hardstanding areas to the east and west used for parking and a driveway running along the southern boundary, connecting the two houses. The centre of the site is amenity grass with a children's playground in the north east corner of this. Several scattered trees are found within the site and newly planted lines of dense leylandii trees are found along the north and south boundaries.

The majority of the site is surrounded by further residential properties and roads. However on the eastern boundary is a section of ancient woodland called Claylane Wood. The site is located on the outskirts of Gravesend, the landscape to the north west is dominated by urban areas with the A2 running near to the south of the site. Woodland and open countryside is located to the east of the site.

The boundary of the site is shown in figure 1 and broad habitat location is shown in appendix 1. The site is located at; TQ 66197052.

¹ KCC Ecological Advice Service letter. Date: 13 April 2022. To Richard Hart, From Luke Wallace. Subject: PRE20210285 / Cobham Lodge

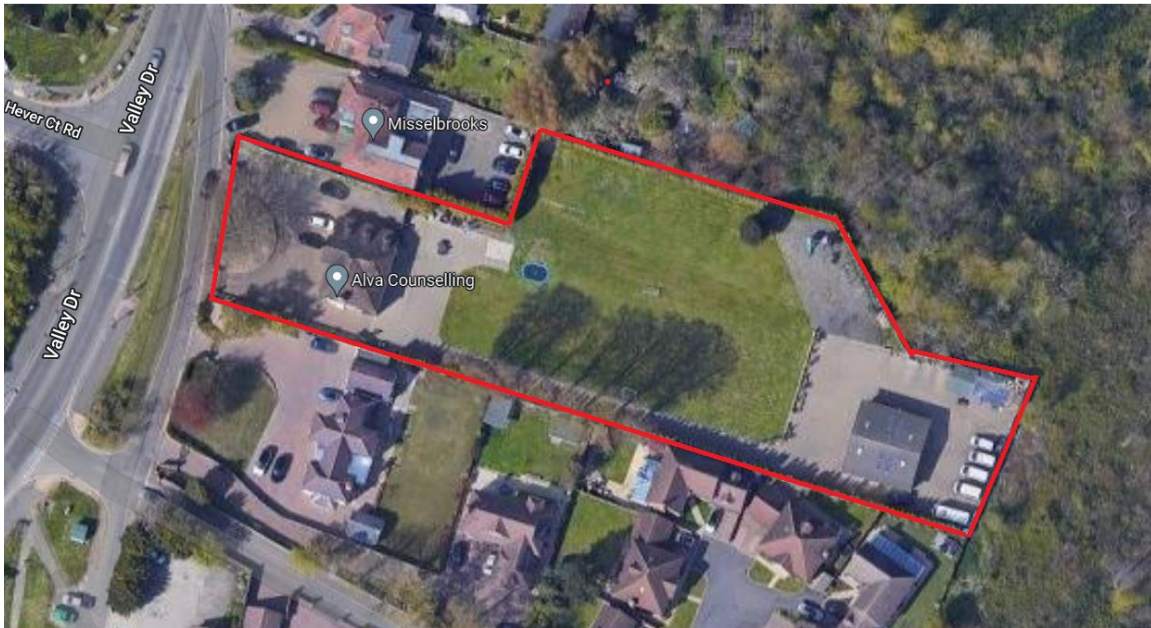


Figure 1: Approximate boundary of the site (image from Google).

1.4 limitations

The habitat assessments in this report are based on the findings of the preliminary ecological assessment. The area measurements have been estimated based on plans and drawings issued to EHM Ltd. Though the calculations have been carried out by a competent ecologist it is possible an error occurs. All calculations and recommendations have been carried out in good faith.

1.5 Relevant Legislation and Planning policies

A full list of UK wildlife legislation and designations can be seen in the appendix. Relevant legislation implications for this site include;

- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act (NERC Act) 2006;
- Environment Act (2022)

1.5.1 Planning Policies

Planning policies, both local and national, may affect any proposed development. The proposals were assessed against policy guidance provided by the National Planning Policy Framework (NPPF, 2021) as well as local and district planning policies.

2. Methods

2.1 Site assessment

EHM undertook a site visit on the 26th of June 2022. This was to carry out a walk over of the site, determining the basic habitats present and their current condition. The potential for these habitats to support protected and notable species was also recorded. The site visit was carried out by an experienced ecologist who is able to appropriately identify habitats and assess their quality and suitability to support species.

The methodology followed that of an Extended Phase 1 Habitat Survey following the methodology of JNCC (1993) as modified by IEA (1995). The Phase 1 Habitat Survey is a standard technique for classifying and mapping British habitats. The aim is to provide a record of habitats that are likely to be ecologically important.

The habitats on site were classified using the UKHAB categories, as per the Biodiversity Net Gain requirements.

2.1.1 Bat Scoping Survey

The site was assessed for its potential to support:

- Roosting bats; and
- Foraging and commuting bats.

Features which could indicate a potential bat roost include:

- Holes and fissures in trees; and
- Gaps in buildings that could allow access to areas such as roof voids, e.g. holes in soffits, broken, loose or missing tiles, damaged lead flashing, etc.

The methodology for assessing bat roost potential followed that recommended by the Bat Conservation Trust².

² Collins, J. (ed) (2016). Bat Surveys for professional Ecologists; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

3. Biodiversity Net Gain Assessment

A Biodiversity Net Gain Assessment has been conducted using the DEFERA Biodiversity Metric 3.1. This was conducted by a competent and qualified ecologist. The methodology set out the Biodiversity Metric 3.1 User guide was followed³. Biodiversity metric 3.1 uses habitats, the places in which species live, as a proxy to describe biodiversity. These habitats are converted into 'biodiversity units'. These biodiversity units are the 'currency' of the metric.

3.1 Mitigation Hierarchy

Biodiversity metric 3.1 supports and reinforces the application of the mitigation hierarchy which is an important principle of ecological good practice. Applying the mitigation hierarchy means aiming to retain habitats in situ and avoiding or minimising habitat damage so far as possible, before looking to enhance or recreate habitats. This sequential approach is encouraged by biodiversity metric 3.1 because it allows overall biodiversity gains to be achieved more easily through the avoidance of on-site habitat losses, rather than relying solely on the creation of new habitat or the enhancement of existing habitat. It works this way because the metric applies multipliers that are based on the risks inherent in creating or restoring habitat, and which are not applicable when existing habitat is safeguarded.

3.1.1 Statutory Obligations

The use of the Biodiversity matrix does not negate the projects statutory obligations in relation to protected species and habitats. The PEA should be referenced for details of these obligations in particular the potential impact to protected species such as nesting birds, bats and reptiles.

3.2 Calculating Units

Biodiversity units are calculated using the size of a parcel of habitat and its quality. The metric uses habitat area (measured in hectares) as its core measurement, except for linear habitats (hedgerows and lines of trees and rivers and streams) where habitat length (measured in kilometres) is used.

To assess the quality of a habitat biodiversity metric 3.0 scores:

- Habitats of different types, such as woodland or grassland, according to their relative biodiversity value or distinctiveness. Habitats that are scarce or declining typically score highly relative to habitats that are more common and widespread.
- The condition of a habitat. Scoring the biodiversity value of the habitat relative to others of the same type.
- Being 'better' and 'more joined-up' are important facets of habitats that can contribute to halting and reversing biodiversity declines, so the metric also accounts for whether or

³ STEPHEN PANKS A, NICK WHITE A, AMANDA NEWSOME A, MUNGO NASH A, JACK POTTER A, MATT HEYDON A, EDWARD MAYHEW A, MARIA ALVAREZ A, TRUDY RUSSELL A, CLARE CASHON A, FINN GODDARD A, SARAH J. SCOTT B, MAX HEAVER C, SARAH H. SCOTT C, JO TREWEEK D, BILL BUTCHER E AND DAVE STONE A 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide. Natural England.

not the habitat is sited in an area identified, typically in a relevant local strategy or plan, as being of strategic significance for nature.

3.3 Principles and Rules of the Biodiversity Matrix

3.3.1 Principles

The Biodiversity matrix works under the following principles;

- **Principle 1:** The metric does not change the protection afforded to biodiversity. Existing levels of protection afforded to protected species and habitats are not changed by use of this or any other metric. Statutory obligations will still need to be satisfied.
- **Principle 2:** Biodiversity metric calculations can inform decision-making where application of the mitigation hierarchy and good practice principles¹⁴ conclude that compensation for habitat losses is justified.
- **Principle 3:** The metric's biodiversity units are only a proxy for biodiversity and should be treated as relative values. While it is underpinned by ecological evidence the units generated by the metric are only a proxy for biodiversity and, to be of practical use, it has been kept deliberately simple. The numerical values generated by the metric represent relative, not absolute, values.
- **Principle 4:** The metric focuses on typical habitats and widespread species; important or protected habitats and features should be given broader consideration.
 - Protected and locally important species needs are not considered through the metric, they should be addressed through existing policy and legislation.
 - Impacts on protected sites (e.g. SSSIs) and irreplaceable habitats are not adequately measured by this metric. They will require separate consideration which must comply with existing national and local policy and legislation. Data relating to these can be entered into the metric, so as to give an indicative picture of the biodiversity value of the habitats present on a site, but this should be supported by bespoke advice.
- **Principle 5:** The metric design aims to encourage enhancement, not transformation, of the natural environment. Proper consideration should be given to the habitats being lost in favour of higher-scoring habitats, and whether the retention of less distinctive but well-established habitats may sometimes be a better option for local biodiversity. Habitat created to compensate for loss of natural or semi-natural habitat should be of the same broad habitat type (e.g. new woodland to replace lost woodland) unless there is a good ecological reason to do otherwise (e.g. to restore a heathland habitat that was converted to woodland for timber in the past).
- **Principle 6:** The metric is designed to inform decisions, not to override expert opinion. Management interventions should be guided by appropriate expert ecological advice and not just the biodiversity unit outputs of the metric. Ecological principles still need to be applied to ensure that what is being proposed is realistic and deliverable based on local conditions such as geology, hydrology, nutrient levels, etc. and the complexity of future management requirements.

- **Principle 7:** Compensation habitats should seek, where practical, to be local to the impact. They should aim to replicate the characteristics of the habitats that have been lost, taking account of the structure and species composition that give habitats their local distinctiveness. Where possible compensation habitats should contribute towards nature recovery in England by creating 'more, bigger, better and joined up' areas for biodiversity.
- **Principle 8:** The metric does not enforce a mandatory minimum 1:1 habitat size ratio for losses and compensation but consideration should be given to maintaining habitat extent and habitat parcels of sufficient size for ecological function. A difference can occur because of a difference in quality between the habitat impacted and the compensation provided. For example, if a habitat of low distinctiveness is impacted and is compensated for by the creation of habitat of higher distinctiveness or better condition, the area needed to compensate for losses can potentially be less than the area impacted. However, consideration should be given to whether reducing the area or length of habitat provided as compensation is an appropriate outcome.

3.3.2 Rules

The following rules apply to the biodiversity matrix;

- **Rule 1:** Where the metric is used to measure change, biodiversity unit values need to be calculated prior to the intervention and post-intervention for all parcels of land / linear features affected.
- **Rule 2:** Compensation for habitat losses can be provided by creating new habitats, or by restoring or enhancing existing habitats. Measures to enhance existing habitats must provide a significant and demonstrable uplift in distinctiveness and/or condition to record additional biodiversity units.
- **Rule 3:** 'Trading down' must be avoided. Losses of habitat are to be compensated for on a "like for like" or "like for better" basis. New or restored habitats should aim to achieve a higher distinctiveness and/or condition than those lost. Losses of irreplaceable or very high distinctiveness habitat cannot adequately be accounted for through the metric.
- **Rule 4:** Biodiversity unit values generated by biodiversity metric 3.0 are unique to this metric and cannot be compared to unit outputs from version 2.0, the original Defra metric or any other biodiversity metric. Furthermore, the three types of biodiversity units generated by this metric (for area, hedgerow and river habitats) are unique and cannot be summed.
- **Rule 5:** It is not the area/length of habitat created that determines whether ecological equivalence or better has been achieved but the net change in biodiversity units. Risks associated with creating or enhancing habitats mean that it may be necessary to create or enhance a larger area of habitat than that lost, to fully compensate for impacts on biodiversity.
- **Rule 6:** Deviations from the published methodology of biodiversity metric 3.0 need to be ecologically justified and agreed with relevant decision makers. While the methodology is expected to be suitable in the majority of circumstances it is recognised that there

may be exceptions. Any local or project-specific adaptations of the metric must be transparent and fully justified.

4 Habitats Present

The following habitat descriptions are taken from site visit. The location and extent of the habitats are shown in the figure in appendix 1. TN refers to a target note. The appropriate UKHAB habitat description has been applied.

4.1 Developed land; Sealed surface

There are two buildings within the site and an additional three structures (together these make up B3 on the map).

B1: The main house and oldest of the buildings (possibly mid 20th century or later). It has several pitches in the tiled roof with three dormer windows added to the north face. Several gaps in the roof were noted. A small section of hanging tiles is located on the front of the building, west face.

B2: this house was built approximately 5-8 years ago and so is in good condition. The roof was difficult to see from ground level but appeared to be constructed with ridged roof tiles. The loft area is used as living space and the whole building is in very good condition. The upper section on the building has been clad using thin concrete planks imitating wood - a few gaps were noted under these on the north and west sides, but the majority was in good condition.

B3: this is a cluster of structures located in the northeast most section of the site. It comprises two small metal containers with a wood clad shed in front and a transparent plastic corrugated roof section. These are all used for storage and in regular use. The wooden shed has no roof void, with the roofing felt directly on the wooden roof.

The site contains extensive areas of hardstanding.

4.2 Modified Grassland

The site contains a large section of the site is amenity grass with many herb species within. This is well maintained and kept short. Species include common bent (*Agrostis capillaris*), yorkshire fog (*Holcus lanatus*), and several herbs including white clover (*Trifolium repens*), Dandelion (*Taraxacum officinale*), daisy (*Bellis perennis*).

4.3 Line of Trees

There are seven mature common lime (*Tilia x europaea*) trees along the southern boundary of the site. These are in a raised planter that spans the entire southern boundary. Three of these possibly have the potential to support roosting bats.

4.4 Urban Trees

The site contains three trees outside of the tree line. As per the DEFRA metric these are best described as urban trees. A large mature possibly veteran copper beech was found at the front of B1 - it is on a raised bed area filled with stones. This was in good condition.

Two conifer trees were located within the grassland, in the north east corner. One was a sequoia species and the other appeared to be an ornamental larch.

4.5 Hedge Ornamental/ Non-native

There was a newly planted hedgerow consisting of leylandii shrubs/trees planted along the north and south boundaries. They are of varying age, the oldest are found along the northwest most section. Several of these have died, particularly along the southeast boundary. A small vegetable patch was located towards the west of the site along the northern boundary.

5. Bat Scoping Survey

5.1 Bat roosts Assessment

Buildings are known to provide suitable roosting opportunities for a number of bat species⁴. An external and internal inspection of the buildings on site was carried out to assess their potential to support bat roosts, following Bat conservation trust guidelines⁵. An internal inspection was undertaken where possible inspecting all roof voids and potential roosting locations with a high-powered torch looking for signs of bats in the form of staining, droppings, feeding remains and the bats themselves. This was followed by an external inspection of the buildings looking for potential ingress points through soffits, eaves, missing roof tiles/slates and brickwork and windows.

Below is a description of the assessment undertaken of the buildings.

5.1.1 B1 roost assessment

The main house is a two level red brick built property with additional loft space, likely built around the 1950's. The north, east and south sides of the house have been rendered, while the front (west) remains as exposed brick. There appears to have been a large balcony structure at the back (east), but this has been removed for health and safety reasons (rotten wood).

The roof is made of clay tiles, the majority of which do not lie evenly, and therefore there are numerous gaps under the tiles of the roof. There are also several pitches to the roof structure, making visibility difficult.

⁴ Bats and Buildings. Bats and the Build Environment Series. Bat Conservation Trust. January 2012.

⁵ Collins, J. (ed) (2016). Bat Surveys for professional Ecologists/; Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Numerous gaps were noted all around the building - at the base of each ridge there was missing mortar. At the front of the property there is a small section of hanging tiles, with gaps under some tiles, while above this there was a pitched roof with wooden supports - gaps were noted around the woodwork and under the tiles at the edge. South of the hanging tiles there were two windows on the first floor, both with missing bricks at the lower corners.

To the south there is a large chimney and what appears to be gaps under the lead flashing. To the north were three dormer windows and each appeared to have gaps under the lead flashing.

The interior of roof is made with wooden battens and rafters, between which are insulation sheets. These are not complete, however, and therefore the battens are exposed in a small number of areas. Some of the pipework had recently been replaced and as such several of the floorboards had been cut away for access - mouse/rat poison had been placed within these gaps. Several gaps were seen at ground level, potentially allowing bats to access the roof void.

The missing mortar at the base of the ridge tiles may allow entry into the loft of B1 - gaps of light were noted inside the loft at these points. The missing bricks at the corners of the front windows could allow access into any cavity wall that may be present. Therefore, following a detailed inspection by a competent ecologist B1 is considered as having a **low** potential to support a bat roost.

5.1.2 B2 bat roost assessment

This is a fully rendered and clad two level building. The cladding is thin concrete panels imitating wood and the majority of this is well laid, however there are sections at the front and one side (west and north respectively) where the panels have come away leaving gaps underneath. The roof could not be seen completely, but appeared to be made with ridge roof tiles, and so are likely to be tightly laid, however the south side of the roof could not be seen from ground level.

The interior loft space has been converted into living space.

The external cladding is unlikely to allow access any further into the building, although the gaps under the cladding could easily be used by common pipistrelle species. B2 is considered as having a **negligible** potential to support a bat roost.

5.1.3 B3 bat roost assessment

B3 comprises a small shed, two small metal containers and plastic corrugated shelter between these. These are all used regularly for storage. The only building of note is the wooden clad shed, however this was mostly in good condition and there was no roof cavity - the roofing felt was tightly laid on a single skin wooden roof.

No evidence of bats or potential roost features were noted in B3. B3 is considered as having a **negligible** potential to support a bat roost.

5.2 Tree bat roost assessment

The trees on the sites were assessed for any Potential Roost Features (PRFs). The bat conservation trust provides information regarding features that may be present in trees that

bats could potentially use for roosting⁶. There were seven common lime trees along the southern boundary, three of which potentially had features suitable for roosting bats. The mature Beech tree to the west of the site is of an age and structure that could support a bat roost. These trees are considered as having a **low** potential to support a bat roost.

5.3 Bat commuting and Foraging habitat

All bat species in the UK eat insects and forage along habitats such as hedgerows, woodlands, grasslands, and waterways⁷. Bats use woodland edges, hedgerows, rivers and other linear features like tree-lined footpaths as corridors to commute from one area of countryside to another⁸. Bats are likely to forage within the site and use the tree/hedge lined boundaries for commuting, particularly in such close proximity to Claylane Wood. Though the foraging habitat on site is limited. The likelihood of commuting and foraging bats to be present on site is considered to be **low**.

5.4 Other protected species assessment

The only other protected species that the site is present on site are nesting birds. Several mature trees and newly planted hedges are found within the site, all of which provide nesting areas for birds.

5.5 Recommendations

5.5.1 Bats

If any works are proposed to B1 that will impact the exterior of the roof then additional bat surveys will be required to ensure no bat roosts are present. Following the BCT guidelines one dusk/ dawn surveys is required for a building of low potential. The surveys may only be carried out during the active season for bats (**May – August**, inclusive) and in suitable weather conditions. This follows the BCT guidelines. If a bat roost is confirmed, then a licence to remove the roost will need to be applied for from Natural England once planning permission has been granted.

5.5.2 Birds

To ensure breeding birds are not impacted any, trees or scrub that may require removal should be removed outside of the breeding bird season, this typically runs from March to September. If vegetation/ buildings require removal during the nesting bird season the area should be subjected to a survey by an experienced ecologist. If there are any nest sites located within the work area a suitable exclusion zone will have to be established until the chicks have fledged. All bird nests are protected in the Wildlife and Countryside Act (see appendix).

⁶ http://www.bats.org.uk/pages/bat_roosts.html#TreeRoosts

⁷ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-habitats/foraging-habitats>

⁸ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-habitats/commuting-habitats>

6. Construction Environment Management Plan (CEMP)

6.1 Introduction

The following CEMP has been produced to ensure that there are no environmental impacts during construction.

6.2 Scope

This plan covers activities relating to the proposed development at Cobham Lodge, Valley drive, Gravesend, Kent, DA12 5UE.

6.3 Project Overview

The proposed development outline is shown in appendix 2. The project involves the construction of 9 residential units in the centre of the site. A new building located in the north west of the site will be constructed containing 11 flats. B1 and B2 will be retained and likely converted into flats.

6.4 Construction Programme

The timings of the construction programme are not yet known.

6.5 Key Activities

The following provides an overview of the key activities likely involved with this project.

6.5.1 Site preparation

The initial phase will involve site preparation which will likely include extensive ground works and removing of required vegetation.

6.5.2 Construction of new buildings

This will involve construction of the new buildings and will likely be the longest phase of the development.

6.5.3 Landscape construction

The phase will involve the implementation of the landscaping and habitat enhancements. Outlined in section 10.

6.6 Environmental Matters

The selected constructor shall operate an environmental policy in which supports the following values, to:

- Conduct their activities with proper regard to the protection of the environment.
- Comply with all relevant regulatory and legislative requirements and codes of practice.
- Communicate with local communities to ensure the work causes the minimum disturbance and disruption.
- Ensure that staff have a good understanding of the environmental impacts of construction work and how to minimise these impacts.
- Ensure their suppliers and sub-constructors apply similar standards to their own work.

6.6.1 Waste and Material Management

All waste materials will be removed from site by a licensed waste constructor utilising skip containers within the site compound, collected and or changed by lorries.

Waste from this site will be dealt with in accordance with the waste duty of care in Section 34 of the Environmental Protection (Duty of Care) Regulations 1991 (b). Materials will be handled efficiently and waste managed appropriately. The constructor shall be aim to minimise waste and to recycle as much material as possible. Due to the limited space on site, waste will generally be sorted for recycling at the waste transfer station.

6.6.2 Dust, Noise and vibration

To help limit potential impacts during construction to nearby sensitive habitats and residential areas the following methodologies will be followed.

Dust

- Construction activities will use water as a dust suppressant;
- Adjacent road surfaces will be frequently swept clean;
- All loads delivered to or collected from the site will be covered where appropriate;
- All road vehicles will be requested to comply with set emission standards;
- Scaffold will have debris netting installed

Noise and Vibration

- The constructor shall take reasonable steps to minimise any noise disruption to adjacent occupiers.
- Any necessary noisy works will be restricted to the Monday to Friday 8.00am to 6.00pm and 8.00am to 1.00pm on Saturdays.
- Where it is necessary to carry out noisy activities, identify them in advance and give notice.
- Operatives working in noisy areas will be monitored to ensure they are wearing the necessary protective equipment and that they are not exceeding their permitted exposure periods.
- Electrically operated plant will be used where practical.
- Try to ensure all plant used on the site is effectively silenced where possible ie: switch off when not in use.
- No externally audible radios or other audio equipment will be allowed on site.

6.6.3 Water

The Client, Principal Contractor, and all Contractors on this project will ensure the protection and integrity of all watercourses and drainage systems and associated flora and fauna of the site and adjacent ancient woodland site by preventing any surface water run-off or potential sources of contamination from reaching the watercourses / drainage systems and the areas of the woodland.

All surface water drainage from impermeable areas and roads will pass through trapped gullies prior to being discharged into any watercourse. These drains will be blocked with straw bales or terram, as required. As appropriate, gullies will have gully guards which will be regularly inspected and replaced or cleaned as necessary, with a record kept. Gully bags will be fitted to prevent silt run off into existing drainage systems where necessary.

If silt spillage is identified, it will be treated as a priority to stop the flow and contain the spillage before it enters surface water drains or watercourses/ground.

6.6.4 Reinstatement

On completion of the works any damage to the grass areas within or around the site will be reinstated with new seeding/turf as required.

6.6.5 Fuel/ Chemical Storage and Use

Any facilities for the storage of oils, fuels or chemicals will be sited on impervious bases and surrounded by impervious bund walls. The volume of the bunded compound will be at least equivalent to the capacity of the tank plus 10%.

If there is multiple tankage, the compound will be at least equivalent to the capacity of the largest tank, or the combined capacity of interconnected tanks, plus 10%.

All filling points, vents, gauges and sight glasses will be located within the bund. The drainage system of the bund will be sealed with no discharge to any watercourse, land or underground strata. Any pipework will be located above ground and protected from accidental damage. All filling points and tank overflow pipe outlets will be detailed to discharge downwards into the bund.

Tanks will be sited in a safe area, away from manholes and surface water gullies. Tanks will be double-bunded, non-gravity diesel tanks. The Fuel tank and hose will be locked secure when not in use and the site will possess a spill control kit. A clearly defined drip control area will be introduced around the tank. Tanks and surrounds will be regularly inspected for damage, spills or leaks as part of weekly inspection.

All measures to control chemical storage, discharge and spillage will cover;

- Oil Storage tanks in excess of 200 litres
- Double Skinned (twin-walled) tanks
- Proprietary Tank Systems
- Mobile Bowsers
- Security
- Dealing with Spills
- Prevention of Contamination of Rivers & Streams
- Storage and use of other chemicals (quantities less than 200L)

6.6.6 Ecological Control Measures

Measures will be put in place to ensure that any protected and notable species that may be found on site is not harmed during development and that measures are in place to protect the adjacent woodland site.

Prevention measures for mammals becoming trapped

The areas surrounding the site have a potential to support protected and notable species such as Hedgehogs and Badgers. The following measures are recommended during construction;

- To prevent badgers/ small mammals becoming trapped in open earth works or excavations that any excavations, that are to be left overnight, should either be covered over or a board placed securely within the excavation that allows access from the bottom of the excavation to the ground level.
- All excavations and trenches should be inspected each morning before works commence. If a badger is found trapped on site the ecologist or local badger group/ RSPCA should be contacted.
- Any loose or soft material such as topsoil should be covered overnight and when not in use to discourage their use by badgers as potential setts. Any mounds should be inspected daily to ensure badgers have not established a sett. If a potential sett is discovered an ecologist should be consulted immediately and the area not disturbed.
- If pipework (over 120mm in diameter) is stored on site the ends should be covered and inspected before use.
- Chemicals will be stored in a secure/ bunded container to avoid disturbance by badgers

Vegetation clearance

Any vegetation that may be required to be removed should be done outside of nesting bird season.

Retained Trees

Any retained trees should have adequate root and crown protection during construction. The trees closest to the site are located at the rear of the existing building which is to be retained and extended to the front, so these trees are not in direct proximity to the proposed works.

Protection of bat habitat during construction

The proposed development will not directly impact bat habitat on or adjacent to the site. During construction the following measures will be followed;

- Avoid illuminating the wider habitats on site, including retained buildings, at dusk or night time- Guidelines provided by the Bat Conservation trust and ILP should be followed⁹
- Limit work to daylight hours
- Limit noise disturbance and other forms of pollution such as dust
- Maintain the wider habitats on site
- Lighting should also be considered post-development with any external lighting positioned so as not to illuminate potential foraging or commuting habitats.

If works are proposed to the roof of the retained buildings then additional surveys are likely to be required to ensure that bat roosts are not present. See section 5.

6.7 Invasive Non-native Species Plan

Invasive plant species were not identified during the PEA site visit.

Though invasive species are not known on site it is important to have appropriate measures in place to reduce the likelihood of them being spread onto site or measures if they are discovered.

6.7.1 Prevention of spread on to site

It is important to consider invasive species in the wider environment around a site. If invasive species are growing on an adjacent site, or upstream of a site on a riverbank, then no matter how good on-site control is, some may colonise the site. If invasive species are observed on an adjacent property:

- Work in partnership with neighbouring landowners to tackle the problem together.
- If the neighbouring landowner is unwilling to cooperate, it is often advisable and cost-effective to offer to pay for the treatment on their land.
- If the neighbouring landowner will not cooperate, take legal advice. In some cases it might be advisable to contact the relevant authority, e.g. Police Wildlife Crime Officer or Local Council.
- In certain cases it may be advisable to install a root barrier to help prevent spread

One of the main ways that invasive species spread to new properties is by fly tipping. This is where material infested with invasive species is illegally dumped across property boundaries. Where this practice is suspected, landowners or site managers should be instructed to:

- Restrict vehicular access and keep gates and barriers locked.
- Watch out for any unusual activity, such as soil being dumped out of a truck. If such activity is observed, immediate action should be taken to inspect any dumped material for invasive species and to report the incident to the appropriate authority.

⁹ <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

- Watch out for freshly dumped soil on a property. If found, it should be treated with suspicion and inspected for the presence of invasive.

All necessary precautions should be taken to ensure that topsoil brought onsite is free of invasive species material. No vehicle should be allowed to enter a site if there is a risk that it might bring fragments of invasive species into the site on its tyres or in its load.

6.7.2 General control measures

Some general precautionary measures are recommended to limit the risk of spreading invasive plants;

- Make sure all vehicles, equipment and footwear are free of plant fragments before leaving the site or a designated contaminated area within a site. If clothing is muddy it should also be inspected.
- Where appropriate, records should be kept of such biosecurity inspections and/or measures.
- Where appropriate, records should be kept of such biosecurity inspections and/or measures.
- If an invasive species is found on site an exclusion zone will be established and indicated by erecting markers and/or barriers with an appropriate notice. This could take the form of coloured tape or some form of fencing, possibly with a notice such as “Invasive Species – Do Not Enter”.
- The ecologist should be contacted.

6.8 Summary

The environmental and ecological protection measures set out in the CEMP will ensure protected and notable species as well as important habitats and sites are not impacted during construction.

7. Ancient Woodland

As discussed, the site borders an area of designated ancient woodland known as Claylane wood, this is also listed as deciduous woodland on the Habitat Priority Inventory (HPI). Though the area to the east of the site, and part of the site, is designated as ancient woodland at the time of the site visit it appeared that the area to the east of the site had been partially cleared.

Government guidance¹⁰ requires the protection of ancient woodland, with at least a minimum 15m buffer between the woodland and development. However as the area that is proposed for development largely consists of existing developed land the potential impacts to ancient woodland habitat will be minimal. Additionally the majority of the proposed development will be outside of a 15m buffer from the edge of the site.

7.2 Protection Measures

To ensure no adverse impacts during construction the pollution control measures set out in section 6.6 will be followed. Additionally, the sensitive lighting plan will help ensure no adverse impacts to the ancient woodland.

7.3 Enhancement measures

The proposed native landscaping will help ensure additional tree planting across the site as well as habitats that will screen the development from the woodland.

¹⁰ <https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences>

8. Biodiversity Net Gain (BNG) Assessment

8.1 Net Gain Assessment

The local planning authority requires the development to demonstrate a net gain in biodiversity. The advice from EAS requires the development to achieve a net gain. The measurement for assessing biodiversity net gain will be the Natural England Biodiversity Metric 3.1¹¹. This will be used to provide a baseline assessment of habitats on site and a projected value of habitats post development following the proposed enhancements.

The Biodiversity Metric 3.1 includes a rule that requires that lost habitats must be compensated for like for like” or “like for better” basis. New or restored habitats should aim to achieve a higher distinctiveness and/or condition than those lost.

8.2 Baseline Assessment

The baseline assessment is calculated by categorising the broad habitat and habitat type, the Phase I habitat category is converted into the corresponding UK Habitat Classification. This is based on the assessment carried out in section 3.1. The matrix then assigns the habitat distinctiveness, the distinctiveness of a habitat is considered as a component of the quality of a habitat parcel. The distinctiveness band of each habitat has been preassigned in biodiversity metric 3.1.

A strategic significance is also assigned to each habitat type. Strategic significance relates to the spatial location of a habitat parcel and works at a landscape scale. It gives additional biodiversity unit value to habitats that have been identified as habitats of strategic importance to that local area. For this assessment the Kent Nature Partnership Biodiversity Strategy 2020 to 2045¹².

Biodiversity metric 3.1 uses habitat condition as one of the measures of habitat quality. The condition assessment approach used in biodiversity metric 3.0 measures a habitat parcel against the ecological optimum state for that particular habitat. The biodiversity matrix provides a list of assessment criteria for each habitat type. The condition of the habitat is then assessed against these criteria; the more criteria present within the habitat the higher the assessed condition.

¹¹ STEPHEN PANKS A, NICK WHITE A, AMANDA NEWSOME A, MUNGO NASH A, JACK POTTER A, MATT HEYDON A, EDWARD MAYHEW A, MARIA ALVAREZ A, TRUDY RUSSELL A, CLARE CASHON A, FINN GODDARD A, SARAH J. SCOTT B, MAX HEAVER C, SARAH H. SCOTT C, JO TREWEEK D, BILL BUTCHER E AND DAVE STONE A 2022. Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide. Natural England.

¹² <https://democracy.kent.gov.uk/documents/s96710/20-00025%20-%20Kent%20Biodiversity%20Strategy%20March%202020.pdf>

8.2.1 Baseline assessment scores

The table below summarises the baseline habitat assessment. The plan in appendix 1 shows the location of the habitats used for the BNG baseline.

Broad habitat	Habitat type	Area (ha)	Distinctiveness	Condition	Strategic Significance
On Site Area					
Urban	Developed land; sealed surface	0.245	V.Low	N/A - Other	Low Strategic Significance
Grassland	Modified grassland	0.216	Low	Poor	Low Strategic Significance
Urban	Urban Tree	0.1497	Medium	Poor	Medium strategic significance
On site hedgerow					
Line of trees	Line of Trees (Ecologically Valuable)	0.042	Medium	Moderate	Medium strategic significance
Ornamental hedgerow	Hedge Ornamental Non Native	0.192	V.Low	Poor	Low Strategic Significance
On-site Baseline					1.09 Habitat Units
On site Hedgerow Baseline					0.56 Hedgerow Units

Table 1: Summary of BNG baseline assessment.

8.3 Proposed Enhancements and Post development assessment

It is understood that the project needs to achieve a net gain in biodiversity. To help achieve this several discussions within the design team have been carried out to develop a suitable design that allows the project to achieve a net gain in biodiversity. The final design includes retaining and enhancing habitats on site and creation of new habitats.

The proposed planting post development is shown in appendix 3.

8.3.1 Retained and Enhanced Habitats

The table below summarises the habitats that are recommended to be retained and the proposed enhancements required to meet the condition change. The proposed enhancements are designed to help ensure the retained habitats meet the Condition Assessment Criteria of the Biodiversity Matrix 3.1.

Habitat type	Area (ha) enhanced/retained	Distinctiveness change	Condition change	Required Actions
Urban tree (large beech to west of site)	0.1497	Medium-Medium	Moderate-Good	• Manage to good horticultural standard • Encourage micro habitat diversity • Plant vegetated habitats around tree
Line of trees	0.042 (km)	Medium - Medium	Moderate - Good	• Plant native vegetation around trees • Allow canopy to develop • Manage to good horticultural standard

Table 2: Summary of enhancement of retained habitats.

8.3.2 Habitats Created On-Site

The table below summarises the habitats that will be in place post development. Broad details of the required ecological enhancements for each habitat are provided. The majority of the created habitats consists of 'vegetated garden'. It is envisaged that this will include a variety of different native species (see section 10.1) but is grouped under the heading of vegetated garden as these areas will be under management of private landowners and therefore it would be difficult to prescribe a management regime and desired condition.

To help ensure that a net gain is achieved areas outside of private residence will be created. These will be communal areas dominated by species rich grassland and woodland.

Newly Created Habitat	Area (ha)	Distinctiveness	Desired condition	Strategic Significance	Required Enhancements/ Management
Developed land; sealed surface		V.Low	N/A - Other	Low Strategic Significance	Erect Bird and Bat boxes within fabric and on the building.
Vegetated garden		Low	Poor	Low Strategic Significance	- Condition fixed as 'poor' - Plant native species
Other woodland; broadleaved	0.0776	Medium	Moderate	High strategic significance	- Remove any undesirable species if present; cherry laurel <i>Prunus laurocerasus</i>, snowberry <i>Symphoricarpos spp.</i>, buddleia <i>Buddleja spp.</i>, cotoneaster <i>Cotoneaster spp</i> - Add variety of native tree species - Sow woodland floral mix in, e.g. EW1¹³ - Add log piles. - Once established manage to promote structural diversity
Other neutral grassland	0.01882	Medium	Moderate	Low Strategic Significance	- Sow wildflower mix with 9-15 species/ m². Example mix EM3¹⁴. - Varied sward height- >20% <7cm and >20% <7cm. - Maintain Bracken <20% and scrub <5%. - Maintain an absence of non native species and <5% undesirable species/ damage.
Urban Tree	0.1465	Medium	Poor	Medium strategic significance	- Manage to good horticultural standard - Encourage micro habitat diversity

Table 3: Summary of enhancement of new habitats.

8.3.3 Habitat Creation and Enhancement Measures

To achieve the desired condition of the enhanced and newly created habitats it will be important that appropriate measures are carried out. The tables above provide some broad actions and measures that will likely be required.

Bat and bird boxes will be included in the building and landscaping to provide additional ecological benefit. Log piles should also be added to areas of retained habitat to create and additional ecological benefit.

Once the extent of the habitat creation and enhancement measures are agreed a specific and detailed biodiversity enhancement plan should be compiled. This will likely need to be agreed with the LPA as a condition of the development. A long term habitat management plan will also be required to ensure that the habitats reach their desired condition and are managed appropriately for biodiversity enhancement.

¹³ <https://wildseed.co.uk/mixtures/view/11>

¹⁴ <https://wildseed.co.uk/mixtures/view/4>

8.4 BNG Results

8.4.1 BNG Matrix Results

The headline results of the DEFERA Matrix 3.1 calculations are shown below. More detailed results are available in the appendix. As can be seen the on-site net change in Habitat units is almost a 10% gain.

The hedgerow units have increased by over 20% this is achieved by enhancing the line of trees on the southern edge of the site.

On-site baseline	<i>Habitat units</i>	1.52
	<i>Hedgerow units</i>	0.56
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	1.66
	<i>Hedgerow units</i>	0.69
	<i>River units</i>	0.00
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	9.13%
	<i>Hedgerow units</i>	23.04%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	0.14
	<i>Hedgerow units</i>	0.13
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	9.13%
	<i>Hedgerow units</i>	23.04%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes ✓	

Figure 2: Headline BNG results.

8.4.2 BNG Trading Rules summary

Rule 3 of the BNG (section 3.3.2) requires that trading down be avoided to ensure losses of habitat are to be compensated for on a “like for like” or “like for better” basis. The option above is able to meet the trading rules. Discussion & Recommendations

8.5 BNG Discussion

The general layout of the proposed development allows for the inclusion of new green space as well as retention and enhancement of existing habitats.

The proposed landscape plan achieves a net gain within the BNG matrix. The net gain is largely achieved by creating high value woodland and grassland habitats on site as well as retaining and adding trees to the landscaping. The grassland will be managed as a meadow type habitat with the grassland, other than footpaths, being left to grow throughout spring and summer and then cut in the late summer/ early autumn with arisings being collected and removed from site. Scattered trees will be added to this area which will help increase the ecological value of this habitat.

The tree line to the south of the site will be retained and enhanced, the existing ornamental conifer tree line around the site will be retained. These linear habitats will continue to provide connectivity across the local area and support protected and native species. The enhancement of these habitats help the project achieve a net gain for linear habitats.

The newly planted woodland areas will be created using a diversity of species. They will be allowed to establish and managed to provide a diversity of structures.

8.5.1 Biodiversity Management Plans

To ensure the enhanced and newly created habitats more detailed management plans will be required. These should include full details of proposed planting including species and preferred planting methodology & time of year.

A suitable long term management plan for the habitats on site will need to be compiled to ensure habitats reach their desired condition. This management plan will need to have an appropriate person or persons, or company assigned for the responsibility of managing the site in long term.

8.6 Conclusion

The proposed development, if the recommendations are followed, will provide an opportunity for biodiversity net gain. The retention of large areas of existing habitats is important in ensuring the development achieves the required net gain. The proposed enhancements will help ensure the site retains and enhances habitats for local wildlife.

9. Sensitive Lighting Plan for Bats

Lighting can adversely impact bats; research has indicated that bats avoid well-lit areas as it impairs their night vision, which despite common misconception they use as well as echolocation to see their environment and prey¹⁵. Guidelines provided by the Bat Conservation trust will be followed¹⁶ during construction to avoid unnecessary illumination.

The following strategy will be split into two main sections;

- During construction
- Post construction

4.1 During Construction Mitigation

To avoid disrupting the potential bat foraging/ commuting habitat during construction it will be important to;

- Avoid illuminating the wider habitats on site at dusk,
 - Trees and tree line, adjacent woodland
 - Potential roost features in retained buildings
- Limit work to daylight hours
- Limit noise disturbance and other forms of pollution such as dust (see section 6.6)
- Maintain the wider habitats on site, this is largely being achieved.

4.2 Post Construction Mitigation

Lighting should also be considered post-development with any external lighting positioned so as not to illuminate potential foraging or commuting habitats. The ILP provides the following steps for limiting disturbance to bats;

- Determine whether bats could be present on site
- Determine the presence of – or potential for – roosts, commuting habitat and foraging habitat and evaluate their importance
- Avoid lighting on key habitats and features altogether
- Apply mitigation methods to reduce lighting to agreed limits in other sensitive locations – lighting design considerations

¹⁵ Fure (2006), Bats and lighting, The London Naturalist, No. 85, 2006

¹⁶ http://www.bats.org.uk/pages/bats_and_lighting.html

4.2.1 Determining the presence of bat habitat and roosts on site

The first two steps have been completed by the site assessment (section 5) which identified potential roost sites in retained buildings and foraging and commuting habitats on site.

4.2.2 Avoid Illuminating bat habitat & Mitigation Methods

The table below summarises the actions recommended to reduce impact of lighting on bat habitats.

Summary of guidance for Minimising impact	Proposed mitigation	Benefit for Bats Species on Site
Use of soft white LED lights- <2700K	All internal lights will be LEDs with colour temp of 2700K.	Internal lights will use a spectrum that will likely have the lowest impact to bats.
Recess internal luminaries	All internal lights will be recessed.	This will reduce light spillage
Avoid upward lighting	All internal lights will be directed downward. The overhang of the building will also limit, potential, upward light spill.	This will limit light pollution to the night sky and the wider area.
Limit use of external lighting.	External lighting will be limited to essential areas only. External lighting will be on set on motion-sensors and short (1min) timers. LED luminaires will be used due to their sharp cut-off, lower intensity, and good colour rendition and dimming capability. Light spill will be managed to ensure wider areas are not illuminated and that there is no upwards illumination.	This alignment will reduce light spill onto sensitive habitats. It will also ensure the new bat house will not be adversely impacted by the development.
Avoid illuminating habitats likely to be used by bats. Employing methods such as; - Screening - Dark Buffers - Lighting controls Positioning/ design of the development.	Triple glazing will be employed on all windows.	Huf Haus calculations suggest that this will significantly reduce light spill, It will also reduce UV light spillage.
	The newly create woodland and grassland areas will not be illuminated. The retained tree line will ensure protection of suitable bat habitat.	The proposed enhancements will protect and improve habitats for bats on site.
	There are no plans to provide lighting across newly created diverse grassland areas and woodland. This will maintain dark buffers across bat foraging and commuting habitats.	This will protect habitats from negative impacts.
Create additional bat habitat	New bat roosts are proposed as part of the development (section 10.3). The proposed habitats will provide a benefit for bats.	These roosts will provide a replacement for the existing roosts that will be impacted.

Table 4: Summary of mitigation measures to reduce impacts of lighting on bat habitats.

10. Native Species Landscape Plan

The proposed landscaping will include a range of native species. The recommendation from the Kent EAS is that a native species only landscape plan will be produced. Below is a list of recommended plants that can be used across the landscaping split into the habitat types shown in appendix 3.

10.1 Vegetated Garden Habitat

The vegetated garden areas will consist of a mixture of grassland, hedgerows, shrubs and trees.

10.1.1 Grassland

The grassland areas within the garden areas are likely to consist of a short-mown lawn habitat. To maximise the biodiversity value of these habitats and ensure they provide some native floral diversity a specially developed mix for low growing areas will be used such as wildflower lawns and meadows¹⁷.

10.1.2 Hedgerows

Hedgerow planting is proposed around sections of the garden areas. These will consist of a species rich mix in the following proportions.

- 50% Hawthorn (*Crataegus monogyna*)
- 5% Dog Rose (*Rosa canina*)
- 10% Field Maple (*Acer campestre*)
- 10% Guelder Rose (*Viburnum opulus*)
- 5% Hazel (*Corylus avellana*)
- 10% Hornbeam (*Carpinus betulus*)
- 10% Spindleberry (*Euonymus europaeus*)

10.1.3 Tree planting

Some trees will be planted within the garden areas. This will be native species such as;

- English Oak (*Quercus robur*)
- Beech, common (*Fagus sylvatica*)
- Hornbeam (*Carpinus betulus*)
- Apple (*Malus x domestica*)
- Wild cherry (*Prunus avium*)
- Field maple (*Acer campestre*)

10.1.4 Other planting

It is likely that other planting will be required in areas of the such as shrubs and plants. This will be a mixture of native shrubs such as those listed in the hedgerow planting. Other floral species

¹⁷ <https://www.wildflowerlawnsandmeadows.com/product/wild-flower-lawn-seed-mix/>

are likely to be required these should be selected from species known to provide an ecological benefit, such as those on the RHS pollinator friendly list¹⁸.

10.1 Neutral Grassland

Part of the communal areas will contain areas of floral rich native grassland. It is recommended that these areas be sown with a suitable general purpose floral mix such as; EM3¹⁹. These areas once established will be managed as a meadow like habitat to encourage species and structural diversity.

10.2 Woodland

Pockets of woodland will be created across the site. These will be created using a mixture of native canopy and understory species, the lists provided in hedgerow and tree planting can be used. To provide an additional enhancement a woodland floral mix will be sown at time of tree planting, EW1²⁰.

Follow woodland creation guide provided by woodland trust²¹. The design principles for urban woodland creation will be followed.

10.2.1 Design Principles

Some of the design principles from the woodland trust that will be incorporated into the woodland on site are listed below.

Predominantly native trees

It is often assumed that native tree species will struggle in urban areas, given the higher levels of air pollution, compacted or disturbed soils, lack of space for rooting, people's preferences for trees' appearance, allergies to birch pollen, and so on. However, native trees can and do thrive, provided the species selected are well-matched to location and prevalent conditions. In doing so, they provide excellent resources for pollinators, birds, bats and other wildlife, as well as a wonderful range of seasonal shapes, colours and textures to enhance urban landscapes.

Develop habitat mosaics and promote structural complexity

The component parts of a woodland ecosystem (e.g. ground layer, shrubs, trees, ponds, glades, etc.) can all be present in the urban forest, but may have a different spatial arrangement to rural woods and trees. Artificial habitats like bird boxes and seed feeders also play a part. This will impact how wildlife uses the resources of the urban forest, and which species can thrive. If designed with wildlife in mind, the urban forest can provide a significant area of well-connected

¹⁸ <https://www.rhs.org.uk/science/pdf/conservation-and-biodiversity/wildlife/plants-for-pollinators-garden-plants.pdf>

¹⁹ <https://wildseed.co.uk/mixtures/view/4>

²⁰ <https://wildseed.co.uk/mixtures/view/11>

²¹ <https://www.woodlandtrust.org.uk/media/50673/woodland-trust-woodland-creation-guide.pdf>

wildlife habitat to complement that of rural areas and avoid urban centres becoming a barrier for biodiversity.

Restore natural processes

Achieving naturally functioning ecosystems within an urban setting can be challenging, and usually a higher level of management intervention is required.

Your design will need to:

- consider how trees can grow free from browsing impacts (For example, grey squirrel populations can often be high due to thriving on garden bird feeders.)
- manage invasive plants (Invasive garden escapes are common, and they may also host damaging tree pests and diseases. Trees and shrubs may provide a valuable buffer between gardens and patches of high value habitat.)
- consider design that discourages vandalism, litter and dog waste
- evaluate how wildlife will respond to traffic, lighting and air pollution as well as addressing soils which may be polluted, compacted, drained or enriched with nutrients
- balance the need for standing and fallen decaying wood – especially that found in ancient and veteran trees – as a key habitat, against safety considerations in areas of high access. (Any trees felled for safety reasons should be left in-situ (or nearby) where possible, to continue the decay process and provide essential habitat.)

10.3 Additional enhancements

10.3.1 Bat Boxes

Though bat roosts are unlikely to be directly impacted it is recommended that bat boxes be



included in the fabric of the new buildings and within retained trees on site. The Ibstock Enclosed Bat Box²² is an example of a bat box that can be incorporated into the building (see left). If it is not practical to incorporate the bat box into the fabric of the building, then an alternative is the Beaumaris

Woodstone Bat Box be used (see picture right).

At least one bat box will be included in each new building.

See bat conservation trust guidelines around positioning bat boxes²³.

In summary, locate boxes:

- Where bats are known to feed and navigate (close to hedges and tree lines);



²² <https://www.ibstockbrick.co.uk/wp-content/uploads/2022/03/37069-Ibstock-EcoHabitats-eBook-v14-Download.pdf#page=6>

²³ http://www.bats.org.uk/pages/bat_boxes.html

- Ideally at least 3m- 4m above the ground (where safe installation is possible);
- Away from artificial light sources (to protect them from predation); and
- Sheltered from strong winds and exposed to the sun for part of the day (usually south, south-east or south-west).

Each of the new buildings will have a bat box added to the southern aspect of the building.



It is recommended that two Schwegler Bat Box 2F (or similar) be erected on retained trees to the south of the site. This is a good general purpose bat box that is used by species such as Noctules (*Nyctalus noctula*) and Pipistrelles (*Pipistrellus sp.*). They are best positioned near existing habitat such as woodland or hedgerows. It is recommended that boxes be placed on existing semi mature trees on site (towards the north) at least 4m above the ground.

10.3.2 Bird Boxes



4x bird boxes are proposed to be included in the development. The Vivara Pro WoodStone Open Nest Box is suitable for a variety of species including; Wrens (*Troglodytes troglodytes*), Robins (*Erithacus rubecula*), spotted flycatchers (*Muscicapa striata*), wagtails (*Motacilla sp.*) and song thrushes (*Turdus philomelos*). The boxes are best placed between 1.5m to 3m amongst dense vegetation where possible. The nest boxes will be added across suitable habitats in the southern section of the site.

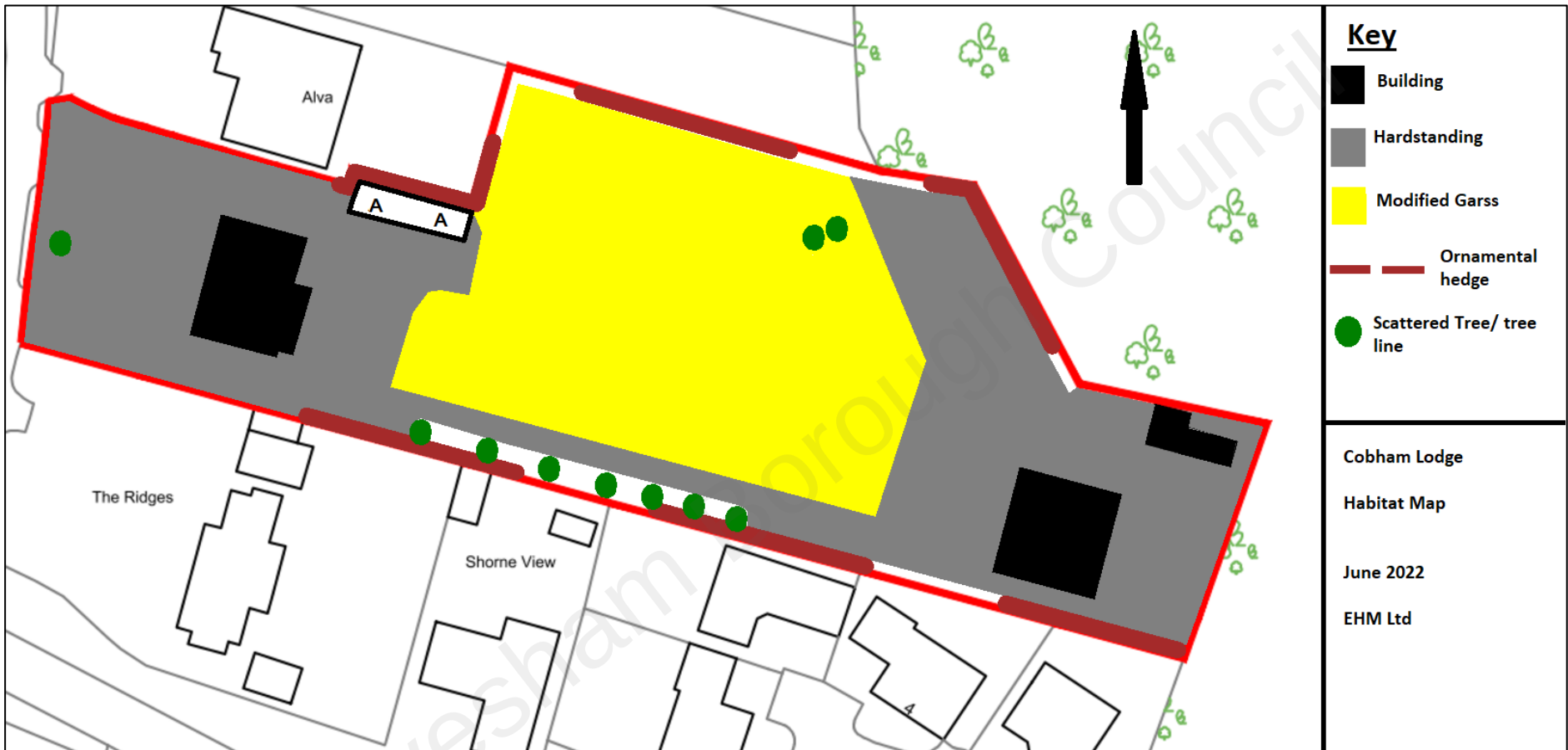
10.3.3 Log piles

It is recommended that log piles be added to the site. These can be created from any logs or brush that are generated from site works and topped up periodically over time. Log piles will help provide refuge and hibernation areas for reptiles and amphibians.

11. APPENDIX

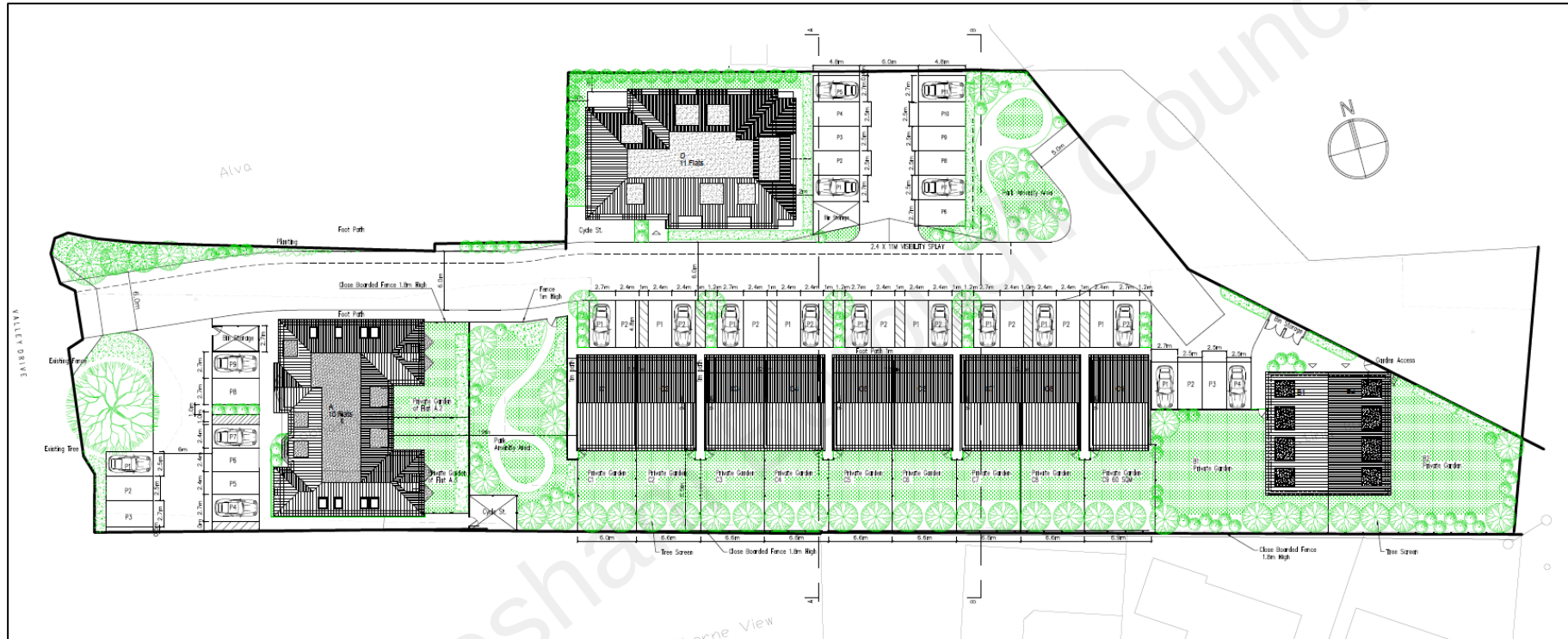
11.1 Appendix 1: Habitat Map

Gravesham Borough Council

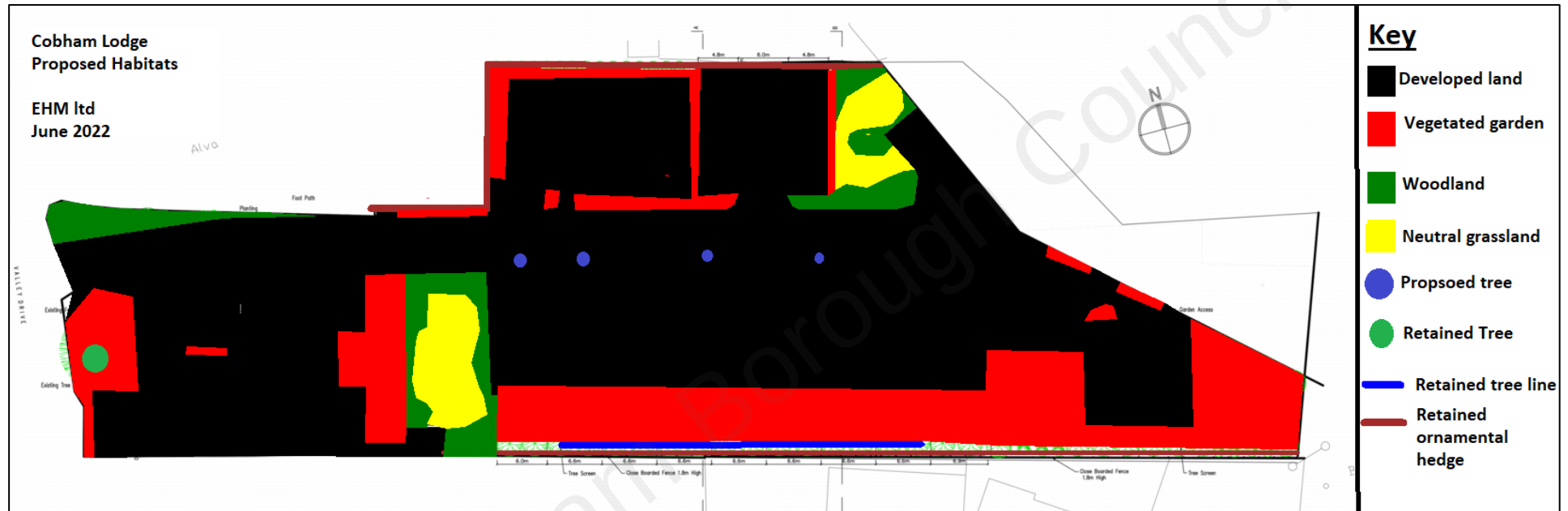


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11.2 Appendix 2: Proposed Development



11.3 Appendix 3: Proposed Habitats



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11.4 Appendix 4: BNG details

Baseline Habitats

Habitats and areas			Distinctiveness	Condition	Strategic significance	Suggested action to address habitat losses	Ecological baseline	Retention category biodiversity value					
Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Condition	Strategic significance		Total habitat units	Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost
Urban	Developed land; sealed surface	0.245	V.Low	N/A - Other	Area/compensation not in local strategy/ no local strategy	Compensation Not Required	0.00	0.035	0	0.00	0.00	0.21	0.00
Grassland	Modified grassland	0.216	Low	Moderate	Area/compensation not in local strategy/ no local strategy	Same distinctiveness or better habitat required ≥	0.86	0	0	0.00	0.00	0.22	0.86
Urban	Urban Tree	0.1497	Medium	Poor	Location ecologically desirable but not in local strategy	Same broad habitat or a higher distinctiveness habitat requires	0.66	0	0.0764	0.00	0.34	0.07	0.32
	Total habitat area	0.61					1.52	0.04	0.08	0.00	0.34	0.50	1.19
								Total area lost (excluding area of Urban trees and Green walls)				0.43	

Baseline Hedgerow

UK Habitats - existing habitats			Habitat distinctiveness	Habitat condition	Strategic significance	Suggested action to address habitat loss	Ecological baseline Total hedgerow units	Retention category biodiversity value					
Hedge number	Hedgerow type	Length (km)	Distinctiveness	Condition	Strategic significance			Length retained	Length enhanced	Units retained	Units enhanced	Length lost	Units lost
1	Line of Trees (Ecologically Valuable)	0.042	Medium	Moderate	Location ecologically desirable but not in local strategy	Like for like or better	0.37	0	0.042	0.00	0.37	0.00	0.00
2	Hedge Ornamental Non Native	0.192	V.Low	Poor	Area/compensation not in local strategy/ no local strategy	Same distinctiveness band or better	0.19	0.192	0	0.19	0.00	0.00	0.00
		0.23					0.56	0.19	0.04	0.19	0.37	0.00	0.00

Habitat Creation on site

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Strategic significance					Temporal multiplier					Difficulty multipliers				Habitat units delivered
			Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic significance multiplier	Standard time to target condition/years	Habitat created / advance/years	Delay in starting habitat creation/years	Standard or adjusted time to target condition	Final time to target condition/years	Final time to target multiple	Standard difficulty of creation	Applied difficulty multiplier	Final difficulty of creation	Difficulty multiplier applied		
Urban	Developed land, sealed surface	0.2897	Very Low	0	N/A - Other	0	Area/composition not in local strategy / no to strategy	Low Strategic Significance	1	0	0	0	Standard time to target condition applied	0	1.000	Low	Standard difficulty applied	Medium	0.67	0.00	
Urban	Vegetated gardens	0.0595	Low	2	Condition Assessment N/A	1	Area/composition not in local strategy / no to strategy	Low Strategic Significance	1	1	0	0	Standard time to target condition applied	1	0.965	Low	Standard difficulty applied	Low	1	0.11	
Woodland and forest	Other woodland, broadleaved	0.0776	Medium	4	Moderate	2	Formally identified in local strategy	High strategic significance	1.15	15	0	0	Standard time to target condition applied	15	0.586	Low	Standard difficulty applied	Low	1	0.42	
Grassland	Other neutral grassland	0.01892	Medium	4	Moderate	2	Area/composition not in local strategy / no to strategy	Low Strategic Significance	1	5	0	0	Standard time to target condition applied	5	0.837	Low	Standard difficulty applied	Low	1	0.13	
Urban	Urban Trees	0.1465	Medium	4	Poor	1	Location ecologically desirable but not in local strategy	Medium strategic significance	1.1	10	0	0	Standard time to target condition applied	10	0.700	Low	Standard difficulty applied	Low	1	0.45	
Total habitat area		0.57																		Total Units	1.11
Site Area (Excluding area of Urban trees and Green walls)																					

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Habitat Enhancement on site

Baseline habitats	Proposed Habitat (Pre-populated but can be overridden)		Change in distinctiveness and condition		Area (hectares)	Distinctiveness	Condition	Strategic significance	Temporal risk multiplier		Difficulty risk multipliers	Habitat units delivered
Baseline habitat	Proposed Broad Habitat	Proposed habitat	Distinctiveness change	Condition change				Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of enhancement	
Urban - Urban Tree	Urban	Urban Tree	Medium - Medium	Poor - Good	0.0764	Medium	Good	Location ecologically desirable but not in local strategy	Standard time to target condition applied	30+	Low	0.55
					0.08							0.88

Hedgerow Enhancement on Site

Baseline Habitats	Proposed (Pre-populated but can be overridden)	Change in distinctiveness and condition		Length (km)	Distinctiveness	Condition	Strategic significance	Temporal multiplier		Difficulty risk multipliers	Hedge unit delivered	
Baseline habitat		Distinctiveness movement	Condition movement		Distinctiveness	Condition	Strategic significance	Standard or adjusted time to target condition	Final time to target condition/years	Final difficulty of enhancement		
Line of Trees (Ecologically Valuable)	Line of Trees (Ecologically Valuable)	Medium - Medium	Moderate - Good	0.042	Medium	Good	Location ecologically desirable but not in local strategy	Standard time to target condition applied	10	Low	0.50	
				0.04								0.50

11.5 Appendix 4: Legislation

Protected species have protection under national legislation such as the Wildlife and Countryside Act 1981 and European legislation such as the Habitats Directive.

Please note the following:

- (1) If there is no record of a particular protected species, this does not signify that the species is absent from the site in question. It may mean that it has not been recorded, that the site has not been surveyed for this species, or that data relating to its presence has not been made available to us.
- (2) The presence of a protected species record does not mean that the species is still present. It means that the species was recorded at that time and place. The implications of the record should be further evaluated, and a survey to establish the current status may be required.
- (3) The following summary of legislation is designed purely as a basic guide, if any action is to be taken regarding any of the protected species listed, then it is imperative that the full relevant legislation be consulted.

WILDLIFE PROTECTION LEGISLATION IN ENGLAND

Legislation that protects wildlife in England exists at the European and national level.

European Law

The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) was aimed at ensuring conservation and protection of all wild plants and animals, increasing cooperation between states, and affording special protection to the most vulnerable or threatened species. It was implemented by the EC Birds Directive (Council Directive 79/409/EEC) and the EC Habitats Directive (Council Directive 92/43/EEC).

The Bonn Convention on Migratory Species of Wild Animals (1979 & 1994) requires the protection of migratory animals. It was implemented by the EC Birds Directive (Council Directive 79/409/EEC) and the EC Habitats Directive (Council Directive 92/43/EEC).

The EC Habitats Directive aims to establish a network of protected areas in order to maintain the distribution and the abundance of threatened species and habitats. A number of species are listed in the annexes.

Annex II lists animals and plants whose conservation requires the designation of Special Areas of Conservation (SACs).

Annex IV lists animals and plants in need of strict protection. For the animals, this prohibits deliberate capture, killing, disturbance (especially during breeding period), destruction or taking of eggs from wild, and destruction or deterioration of breeding sites or resting places. For the plants, this prohibits deliberate picking, collecting, uprooting, cutting, destruction, and trade in entire plants or parts, at all stages of life.

Annex V lists animals and plants for which taking in the wild may be subject to management measures

National Law

Wildlife and Countryside Act The Wildlife and Countryside Act 1981 (as amended) is the main source of legal protection for wildlife in England and was strengthened by the Countryside and Rights of Way Act 2000. A statutory five-yearly review of Schedules 5 and 8 (protected wild animals and plants) is undertaken by the relevant authorities. Species protection is provided under Schedules 1, 5, 6 and 8:

Schedule 1 lists bird species that are rare, endangered, declining or vulnerable. The Schedule is divided into two parts. Part I lists birds which receive special protection; these birds receive additional protection from disturbance at the nest. Part II lists birds that receive the same level of special protection, but only during the breeding season.

Schedule 5 protects animal (other than bird) species from certain actions, according to the sections of the Act under which they are listed:

S9 (1) prohibits the intentional killing, injury or taking. S9 (2) protection is limited to possessing and controlling. S9 (4a) prohibits the damaging, destroying or obstructing access to any place used by the animal for shelter or protection. S9 (4b) prohibits disturbing the animal while it is occupying any structure or place which it uses for shelter or protection. S9(5) prohibits the selling, offering for sale, possessing or transporting for purpose of sale, or advertising for sale, any live or dead animal, or any part of, or anything derived from such an animal. Species on this Schedule do not appear on the PSI.

Schedule 6 lists animals that may not be killed by certain methods. Even humane trapping for research requires a licence.

Schedule 8 lists plant species for which it is prohibited to intentionally pick, uproot, destroy, trade in, or possess (for the purposes of trade).

Under the Wildlife and Countryside Act, all wild plants in Britain are protected from intentional uprooting by an unauthorised person. Landowners, land occupiers, persons authorised by either of these, or persons authorised in writing by the Local Authority for the area are exempt from this, except for Schedule 8 species.

Conservation Regulations the Conservation of Habitats and Species Regulations 2010 (as amended) transpose the EC Habitats Directive into national law. In addition to enabling the designation of SACs, the regulations also provide species protection:

Schedule 2 protects the listed animals from deliberate capture, killing, disturbance or trading in.

Schedule 4 protects the listed plants from picking, collecting, uprooting, destroying or trading in.

These actions can be made lawful through the granting of licences by the appropriate authorities. Licences may be granted for a number of purposes, but only after the appropriate authority is satisfied that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild the population of the species concerned.

Protection of Badgers Act the Protection of the Badgers Act prohibits the killing, injuring or taking of badgers and damage or interference with a badger sett, unless licensed to do so by a statutory authority.

International and European Obligations

In the UK, species receiving protection under international legislation and agreements are protected through the Wildlife and Countryside Act, so are not shown separately in the BMERC notable species lists. For reference, the relevant categories are shown below.

Bern Convention on the Conservation of European Wildlife and Natural Habitats the Bern Convention aims to ensure the conservation of wild flora and fauna species and their habitats.

- Appendix 1 (strictly protected flora) - Plants for which contracting parties will prohibit deliberate picking, collecting, cutting or uprooting.
- Appendix 2 (strictly protected fauna) - Animals for which contracting parties will prohibit deliberate capture, possession, killing, damage to or destruction of breeding or resting sites, disturbance or destruction or taking of eggs. Appendix 3 (protected fauna) - Animals for which contracting parties will include closed seasons and regulate their sale, keeping for sale, and transport for sale or offering for sale of live and dead wild animals. (Not included in Notable Species List).

Bonn Convention on Migratory Species the Bonn Convention aims to conserve terrestrial, marine and avian migratory species throughout their range.

- Appendix 1 (migratory species threatened with extinction) - Species for which contracting parties will strictly protect and endeavour to conserve or restore the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.
- Appendix 2 (migratory species that need or would benefit from international co-operation) - Species for which contracting parties will be encouraged to conclude global or regional agreements for the conservation and management of individual species or, more often, of a group of species. (Not included in Notable Species List).

The EC Council Directive on the Conservation of Wild Birds the Birds Directive provides a framework for the conservation and management of all wild birds in Europe. As well as designating important sites for birds as Special Protection Areas, birds are generally protected from deliberate killing or capture and destruction of or damage to their nests or eggs, and deliberate disturbance. Allowances are made for game birds.

UK BAP & notable species

UK Biodiversity Action Plan and Section 41 Species

Biodiversity, or biological diversity, is the whole variety of life on Earth. The Convention on Biological Diversity (CBD) came about as a result of the 1992 Earth Summit. As one of 168 countries to sign up to the CBD, the UK was required to develop a national strategy for the conservation of biodiversity; the UK Biodiversity Action Plan (UKBAP) was born.

The UKBAP is the result of contributions involving a wide range of people and organisations, enabling the identification of species and habitats that are listed as priorities for conservation action. A 2007 review of the UKBAP has resulted in 1149 species and 65 habitats being listed as conservation priorities. For more information see www.ukbap.org.uk.

In addition to the national priorities and targets, action is also being taken at local level. The Essex Biodiversity Project is responsible for implementing the Essex Biodiversity Action Plan, which has 28 priority species and 15 priority habitats currently listed. For more information see www.essexbiodiversity.org.uk.

The UK BAP

(From Explanatory Note by Defra and Natural England on Section 41 of the Natural Environment and Rural Communities

(NERC) Act 2006 - Habitats and Species of Principal Importance in England)

The England Biodiversity List has been developed to meet the requirements of Section 41 of the Natural Environment and Rural Communities Act (2006). This legislation requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity.

The S41 list will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions. In particular:

- Regional Planning Bodies and Local Planning Authorities will use it to identify the species and habitats that should be afforded priority when applying the requirements of National Planning Policy framework (NPPF) and PPS9 Circular to maintain, restore and enhance species and habitats.
- Local Planning Authorities will use it to identify the species and habitats that require specific consideration in dealing with planning and development control, recognising that under NPPF and PPS9 Circular the aim of planning decisions should be to avoid harm to all biodiversity.
- All Public Bodies will use it to identify species or habitats that should be given priority when implementing the NERC Section 40 duty.

Habitats of Principal Importance Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that have been identified as requiring action in the UK Biodiversity Action Plan (UK BAP). They range from habitats such as upland hay meadows to lowland mixed deciduous woodland and from freshwater habitats such as ponds to marine habitats such as subtidal sands and gravels.

Species of Principal Importance There are 943 species of principal importance included on the S41 list. These are the species founding England which have been identified as requiring action under the UK BAP. In addition, the Hen Harrier has also been included on the List because without continued conservation action it is unlikely that the Hen Harrier population will increase from its current very low levels in England.

Relationship with the UK Biodiversity List of Species and Habitats the UK BAP list of priority species and habitats is an important reference source and will be the focus for conservation action across the UK over the next decade. It has been used to draw up the species and habitats of principal importance in England under S41 of the NERC Act.

The revised UK BAP list of priority species and habitats can be downloaded from the UK Biodiversity Website: <http://www.ukbap.org.uk/NewPriorityList.aspx>

Relationship with the biodiversity duty under Section 40 of the NERC Act There is a general biodiversity duty in the NERC Act (Section 40) which requires every public body in the exercising of its functions to 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'.

There is no direct relationship between the Section 41 duty on the Secretary of State to publish the list and promote the taking of steps to conserve the habitats and species on it, and the Section 40 duty on public bodies to have regard to the purpose of conserving biodiversity. Importantly:

- (a) Biodiversity, as covered by the Section 40 duty includes all biodiversity and not just the habitats and species of principal importance. However, there is an expectation that public bodies would refer to the S41 list when complying with the section 40 duty.
- (b) The duty on the Secretary of State to promote the taking of steps by others is not restricted to public bodies.

Defra guidance for local authorities and public bodies on implementing the biodiversity duty in the NERC Act draws attention to the S41 list, emphasising that local authorities and public bodies have a role to play in ensuring the protection of these species and habitats. Copies of the guidance can be downloaded from:

<http://archive.defra.gov.uk/environment/biodiversity/documents/pa-guid-english.pdf>

The overall aim of the Essex Biodiversity Project is to protect, conserve and enhance the variety of wildlife species and habitats in Essex through the successful implementation of the Essex Biodiversity Action Plan.

Gravesham Borough Council