Hartley Gardens Biodiversity Net Gain Baseline Calculation

Tendring District Council

November 2020

Essex County Council

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Executive Summary

This report provides a Biodiversity Net Gain (BNG) Baseline Calculation for Hartley Gardens, which is situated immediately north of Clacton and to the east of the A133.

The study site is listed as a strategic site allocation within the Tendring District Local Plan 2013-2033 Publication Draft June 2017 and is identified as a broad location for growth under Policy SAMU 2 in the Main Modifications to that draft.

This BNG Baseline Calculation is provided as part of a suite of documents to ensure that there is an adequate ecological evidence base for the site to help inform the illustrative masterplan and delivery strategy for the site to support examination and policy adoption in the Tendring Local Plan.

This Assessment identifies opportunities for ecological enhancement at Hartley Gardens, including provision of 10% Biodiversity Net Gain (BNG), based upon enhancing the current ecological resource, and creating new priority habitat where habitat losses have occurred.

This report aims to:

- Calculate baseline conditions as biodiversity units;
- Calculate changes to biodiversity units as a result of the proposed development
- Calculate proposed mitigation measures (as far as possible) and enhancement opportunities where appropriate to demonstrate at least 10% Biodiversity Net Gain.

The Defra Biodiversity Metric 2.0 has been used in this report to demonstrate BNG. Two scenarios were calculated, one using the current illustrative masterplan, and one with an additional parcel of housing removed from this plan, to allow 8ha more land for biodiversity enhancement measures.

The development currently detailed in the illustrative Green Infrastructure Plan does not achieve 10% biodiversity net gain, with a figure of 5.7% gain for Habitat units and 2.9% gain in Hedgerow units predicted.

It is believed that 10% net gain could readily achieved by either increasing the extent of the growth area, reducing the area of the development parcels within the growth area, focussing on the detail of habitat opportunities within the development parcels or considering off-site habitat creation or enhancement.

Version	Date	Author	Description of changes
0.1	06/10/2020	Zara Hanshaw	Drafted
		Hamish Jackson	Maps Drafted / Reviewed internally / Issued
0.2	19/10/20	Emma Simmonds and Zara Hanshaw	Drafted
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0.5	25/11/2020	Sue Hooton	Issued

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1.0Introduction

Site Background

1.1. Tendring District Council instructed Place Services to produce a Biodiversity Net Gain (BNG) Baseline Calculation for Hartley Gardens. The study site is listed as a strategic site allocation within the Tendring District Local Plan 2013-2033 Publication Draft June 2017 and is now identified as a broad location for growth in Main Modifications to this draft.

1.2. The biodiversity net gain calculation for the site has been undertaken as part of the ecological evidence base to support the SAMU 2 Hartley Gardens broad location for growth policy. It has been undertaken to provide a quantitative measure of the biodiversity on site then applies a development scenario that meets the policy SAMU 2 Hartley Gardens requirements to indicate the potential loss of habitat and how this could be compensated for onsite together with ecological enhancements (10%) to inform future ecological and net gain planning for the site. This is to evidence how 10% net gain can be achieved on site and assist in demonstrating the soundness and deliverability of the policy requirements.

1.3. This Biodiversity Net Gain Assessment includes all land indicated on the drawing provided in Figure 1. This area is hereafter referred to as 'the site'. The BNG Baseline Calculation uses the Defra Biodiversity Metric 2019 (beta version). The baseline Metric calculation will need to be updated when the new Metric is published by Natural England, to inform the site wide approach that the DPD will define and for any subsequent planning applications.

1.4. The growth location covers an area of approximately 130 hectares. The site is situated on the northern boundary of Clacton (to the north of St Johns Road). The A133 is present to the east of the site and forms the entirety of the eastern boundary. This land is predominantly open arable farmland, bordered by hedgerow boundaries. Hartley Woods (Ancient Woodland and Local Wildlife Site) is located directly to the north west of the site and Hartley Brook extends from these woods across the site to Pickers Ditch in the south east corner.

1.5. The aims of this report are to:

- Calculate baseline conditions as biodiversity units.
- Calculate changes to biodiversity units as a result of the proposed development
- Calculate proposed mitigation measures (as far as possible) and enhancement opportunities where appropriate to demonstrate at least 10% Biodiversity Net Gain.

1.6. A location plan and aerial views are provided in figures 1 and 2 respectively.

Figure 1: OS map with location of the site

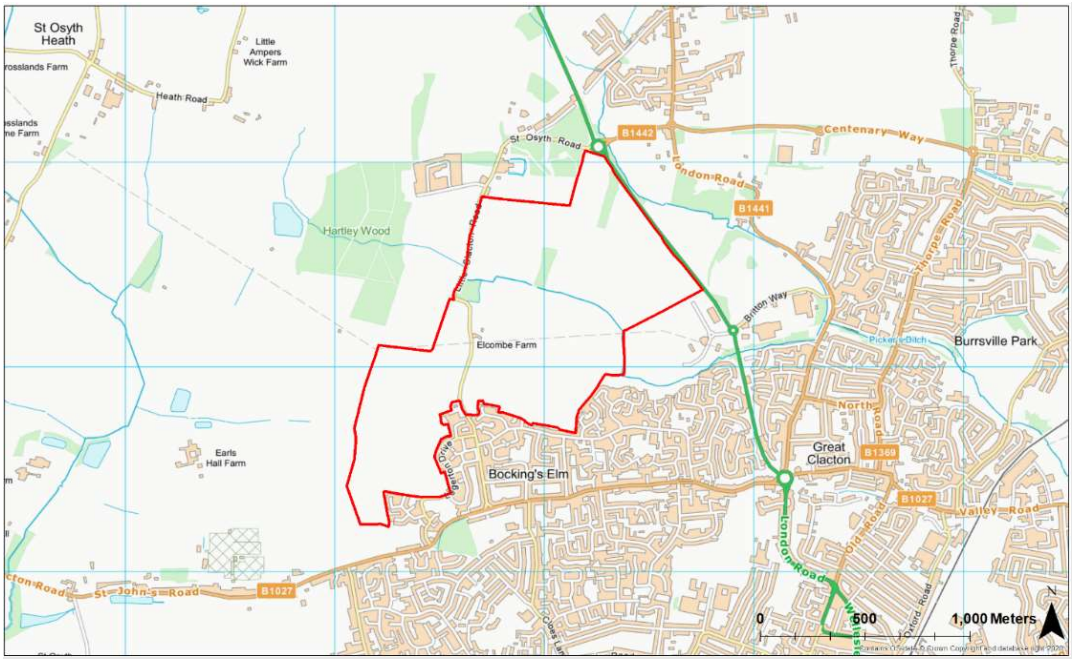


Figure 2: Aerial photography of the site

Biodiversity Net Gain

1.7. Biodiversity Net Gain (BNG) is an approach to development that leaves biodiversity in a better state than before, whereby the development attempts to achieve a positive net outcome for biodiversity on the site, post development.

1.8. This Assessment identifies opportunities for ecological enhancement at Hartley Gardens, aiming for provision of a minimum 10% BNG, based upon enhancing the current ecological resource, and creating new habitat where habitat losses have occurred.

1.9. The Defra Biodiversity Metric 2.0 has been used in this report to demonstrate BNG. It is a useful tool to help inform plans and decisions to benefit biodiversity. However, it is important to be aware of its limitations. For BNG to be used appropriately and to be successfully implemented (i.e. achieving a BNG), the Good Practice Principles for Development1 established by Baker et al. (2019) must be adhered to. These principles have been developed by the Construction Industry Research and Information Association (CIRIA), the Chartered Institute for Ecology and Environmental Management (CIEEM) and the Institute of Environmental Management and Assessment (IEMA).

1.10. The Biodiversity Metric does not override existing planning policy or legislation, including the mitigation hierarchy, which should always be considered as the Metric is applied. The mitigation hierarchy states that action must first be taken to avoid any adverse impact to biodiversity, to mitigate (on site) any impacts that cannot be avoided and, only as a last resort, to compensate (off site) for any remaining impacts.

1.11. The outputs of the Biodiversity Metric are not absolute values but, instead, they provide proxy for the relative biodiversity worth of the site before and after intervention. The quality and reliability of outputs will depend on the quality of the inputs. Like for like habitat or better should be the aim and one habitat should not be replaced with another where possible.

1.12. It is important to emphasise that, while the Metric provides a useful tool to demonstrate biodiversity net gain, it does not remove the need for professional judgement by a suitably competent ecologist. Ecological functionality is important to underpin the assessment and the site's design should ultimately be based upon the Good Practice Principles. The Metric should also not be a reason to miss opportunities to benefit key species through biodiversity net gain where they are not directly accounted for within the Metric.

Local Planning Policy

1.13. This report has been prepared with reference to draft local policy in relation to the Hartley Gardens site allocation, which incorporates suggested amendments from the Council to Policy SAMU2 and which includes the 10% net gain requirement:

Policy SAMU2

[1] The Good Practice Principles for Development can be found at: *https://cieem.net/resource/biodiversity-net-gain-good-practice-principles-for-development/*

DEVELOPMENT AT HARTLEY GARDENS, CLACTON

Land north of Bockings Elm and west of A133 shown on the Map SAMU2, is designated as a broad location for growth for mixed use development for the phased and comprehensive delivery of the following:

a) approximately 1,700 new homes of mixed sizes and types to meet evidenced local housing need within the Council's most up to date Strategic Housing Market Assessment and to include 30% affordable housing as set out in Policy LP5
b) up to 7 hectares of land for employment;
c) 2.1 hectares of land for a new two-form entry primary school with co-located 56 place early years and childcare facility (D1 use) and/or financial contributions towards primary school and secondary school provision as required by the Local Education Authority based on evidenced need through Section 106 Planning Obligations;
d) New facilities and/or financial contributions to support new health provision based on evidenced need;
e) Green infrastructure which should provide a multi-functional and connected network, including amenity green space, parks, allotments and natural and semi natural green space (meeting the standards set out in Policy HP5) and provides for attractive green walking and cycling routes;
f) To deliver at least 10% biodiversity net gain;
g) A sustainable movement network, including principal points of highway access, a hierarchy of streets, public transport and connected walking and cycling routes within the site and beyond; and
h) The provision of sufficient utility infrastructure working with the relevant infrastructure providers to ensure that such provision is achieved in a timely manner.

1.14. No planning applications will be approved until a site-specific Hartley Gardens DPD has been prepared and adopted by the Council. The purpose of the DPD will be as follows:

- To provide further detail on the geographical extent and boundary of the allocation, ensuring a defensible and sensitive boundary to the open countryside beyond;

- To set out how Policy SAMU2 development objectives and masterplanning principles will be achieved through the site specific DPD which will provide the means to inform, assess and determine planning applications and secure comprehensive, co-ordinated and integrated sustainable development;

- To facilitate and support the co-ordination and timely delivery of the green, social and physical infrastructure necessary to facilitate growth in this location.

1.15. This is to ensure the comprehensive and co-ordinated development of the site, to ensure the master planning principles below are addressed and to provide a clear delivery plan to

ensure the right infrastructure is funded and delivered at the right place and at the right time.

1.16. The Council will not accept piecemeal development which does not address the policy requirements. Development within the broad location for growth in advance of the Hartley Gardens DPD may be permitted provided that:

1.17. There would be no prejudice to the delivery of the wider Hartley Gardens development (including its infrastructure requirements) and would not undermine the integrated and co-ordinated approach to the wider development;

1.18. The development demonstrably conforms to the policy requirements and principles of Policy SAMU 2 Hartley Gardens;

1.19. A site wide highway infrastructure strategy has been agreed by the County Council and District Council, opportunities for sustainable modes of transport have been secured and will be delivered and that the residual impacts upon the transport network will not be severed.

Masterplanning Principles

1.20. The Hartley Gardens DPD will provide further guidance to meet the following principles and all development proposals should accord with these:

a) To create a series of permeable and legible well-defined streets which are cycle and pedestrian friendly and link into the existing built up area and local facilities (e.g. retail and schools);
b) To identify off site highway works required to support new development, their phasing and funding;
c) To identify public transport measures to ensure sufficient access to the site by bus and rail and provide a series of walking and cycling routes within the site with strong and positive linkages to the existing network;
d) To create a high quality built and natural environment that respects the built and landscape character and context of the local area and is in accordance with the National Design Guide and the Essex Design Guide;
e) To incorporate in the design of new development measures to minimise the contribution to climate change and to ensure new development is resilient and adaptable to the effects of climate change;
f) To create a connected multi-functional green infrastructure network which protects and enhances existing site features of landscape and ecological value such as the expansion of the Pickers Ditch Green corridor to the south of the site, the copses at T Grove and Long Grove (both registered on the Priority Habitat Inventory as Deciduous Woodland and the National Forest Inventory as Broadleaved Woodland, ancient

woodland (including Hartley Woods to the north of the site), any veteran trees, hedgerows and other important landscape features and important habitats;

g) To ensure no net loss of biodiversity and to deliver positive benefits to biodiversity through the restoration, enhancement and creation of appropriate semi-natural habitats within and through the site to maintain, restore and create functional ecological networks;
h) To establish a sustainable drainage system across the site that integrates with the green infrastructure network and utilises where practicable existing watercourses (e.g. Hartley Brook and Pickers Ditch), ponds, ditches and any greenways associated with retained hedgerows and maximise habitat value;
i) To create a landscape structure that retains and utilises existing landscape features (such as hedgerows, trees, Hartley Brook and Pickers Ditch) and uses new planting and landscaping to sensitively integrate new built development and provide an attractive green setting;
j) To use structural planting and the location, orientation and design of new buildings to maintain the landscape setting and separate identity of Little Clacton and to carefully screen and sensitively integrate new infrastructure and buildings from the open countryside to the west to minimise any visual impact;
k) To identify opportunities to preserve and enhance the setting and significance of heritage assets at Bovills Hall, Earls Hall and Dutchess Farmhouse and Bluehouse Farm in accordance with the recommendations for avoiding harm, mitigating impacts and maximising enhancements in the Heritage Impact Assessment;
l) Where an archaeological evaluation (trial trenching where necessary) identifies surviving archaeological deposits, an appropriate mitigation strategy for preservation in situ or by excavation should be submitted;
m) To demonstrate that no internationally designated site would be adversely affected by the development either alone or in combination with other proposals as per the requirements of Policy PPL 4 and future proposals will need to demonstrate no adverse impact on water quality as per the requirements of Policy PPL5; and
n) To demonstrate how a phased approach to development can deliver the required infrastructure when it is required and create an integrated and sustainable community.

2.0Methodology

2.1. This assessment has been undertaken using the Biodiversity Metric 2.0 (Natural England, December 2019)[2]. This classifies the habitat parcels onsite to calculate a numerical value of "baseline biodiversity units". The habitat parcels are classified based on the:

- Habitat type
- Area/Length
- Distinctiveness
- Condition
- Ecological Connectivity
- Strategic Significance

2.2. The Biodiversity Metric 2.0: User Guide and the Technical Supplement (Natural England, 2019b)3 were used to inform the assessment. Four key process steps were used, as set out in Figure 2-1 of the User Guide. The four steps are: project planning, data collection, calculation and informing design and decisions.

Data Collection

2.3. Site visits were carried out on the 18th & 23rd September 2020 under the supervision of Sue Hooton CEnv MCIEEM BSc (Hons), Principal Ecological Consultant. As part of a Preliminary Ecological Appraisal, habitats on the site were mapped using UKHab-Professional at Primary Hierarchy Level 5, with a minimal mapping unit of 25m^2. The UK The UK Habitat Classification allows the identification of habitat types based upon their plant communities and is structured to recognise all of the Priority Habitats set out in the NERC Act Section 41 list of Habitats of Principal Importance for the conservation of biodiversity, alongside those habitats of lower nature conservation significance. The results were mapped on ArcGIS to provide the area and linear measurements required.

Calculation

2.4. All of the habitat parcel and hedgerow section data was entered into the Beta Test version of the Biodiversity Metric 2.0 calculation tool (an Excel spreadsheet), with the additional information needed to calculate the habitat units in the ecological baseline for the site. This information creates the numerical parameters by which the number of Biodiversity Units

[2] The Biodiversity Metric 2.0 and associated guidance can be downloaded from: *http://publications.naturalengland.org.uk/publication/5850908674228224*
[3] The Technical Supplement for the Biodiversity Metric 2.0 (Beta edition) can be downloaded from: *http://publications.naturalengland.org.uk/publication/5850908674228224*

for Habitats and Hedgerows are calculated. A brief explanation of these factors is provided below.

Area/Length

2.5. The Biodiversity Metric assesses linear habitats, such as watercourses or hedgerows separately from other habitat parcels. Linear habitats are measured in kilometres, non-linear habitats are measured in hectares. Areas and lengths were all measured using ArcView online.

Distinctiveness

2.6. Each habitat in the UK Habitat Classification is automatically assigned a score for distinctiveness within the Metric. Distinctiveness recognises the different characteristics of habitats in relation to their capacity for supporting species richness, their tendency to support species found rarely in other habitats, and the rarity of the habitat itself. Table 1 shows the categories for distinctiveness, taken from the Biodiversity Metric 2.0: User Guide and Technical Supplement (Natural England, 2019b).

Table 1 – Biodiversity Metric distinctiveness categories

Categories	Explanation	Score
Very High	Priority habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action e.g. blanket bog	8
High	Priority habitats as defined in Section 41 of the NERC Act requiring conservation action e.g. lowland fens	6
Medium	Semi-natural habitats not classified as Priority Habitat	4
Low	Habitat of low biodiversity value e.g. temporary grass and clover ley; intensive orchard	2
Very Low	Little or no biodiversity value e.g. hard standing or sealed surface	0

2.7. The Biodiversity Metric also uses the habitat classification system to identify “irreplaceable habitats”. The Metric excludes ancient woodland and veteran trees as this is irreplaceable habitat and outside the Metric parameters. It is important to note that BNG or no net loss cannot be achieved for the scheme if there is a negative impact on an irreplaceable habitat. Irreplaceable habitats require separate consideration.

Condition

2.8. The condition of each habitat is assessed separately using the methods set out in The Biodiversity Metric 2.0: User Guide and Technical Supplement (Natural England, 2019b)[4]. This approach details condition criteria for each habitat type, and then applies thresholds for how many of these criteria are met to establish the condition score of the habitat. This requires detailed assessment of the habitat prior to completing the Metric. Habitats at the bottom end of distinctiveness do not have a specific approach to condition assessment and are instead given a standard condition score.

Ecological Connectivity

2.9. The importance of ecological connectivity is recognised in a limited way within the Beta Test version of the Metric, with a modest multiplier applied to the number of Units calculated for habitats with High or Very High distinctiveness. This seeks to value larger habitat blocks more highly and encourage the creation of larger habitat blocks, with consequent benefits to the resilience of the habitat and its susceptibility to external factors, including climate change.

Strategic Significance

2.10. A multiplier to the unit score can be applied in situations where the habitat to be created in an area matches a strategic priority for biodiversity that has been stated in a published document. This recognises the value of habitat creation that contributes at a wider landscape scale to the achievement of environmental objectives. The Biodiversity Metric 2.0: Auditing and Accounting Technical Supplement (Natural England, 2019c) states that: "ideally these aspirations will have been summarised in a local strategic planning document which articulates where biodiversity is of high priority and the places where it is less so."

2.11. No such strategy document has been produced for the Tendring area to date and so the default value for strategic significance is 'Low' and no multiplier is applied.

Risk factors

2.12. The Metric includes two risk factor multipliers that reflect the difficulties in creating certain habitat types in a way that achieves significant biodiversity benefits. These are "Time to target condition" and "Difficulty of creation". These recognise that different habitats attain degrees of maturity at different rates and that the successful creation of some habitats is not certain, due to various environmental and human factors.

[4] The Technical Supplement for the Biodiversity Metric 2.0 (Beta edition) can be downloaded from: *http://publications.naturalengland.org.uk/publication/5850908674228224*

2.13. Thus, the planned creation of a habitat that will take a substantial amount of time to reach target condition, such as woodland, or that is considered difficult to achieve, such as lowland fen, would equate to fewer Habitat Units than an existing area of the same habitat The Metric contains standard multipliers for each habitat class.

Biodiversity Net Gain

2.14. A Green Infrastructure Framework has been prepared for the growth location by Place Services to support Policy SAMU 2 and this was used to provide an indication of the likely impacts to existing habitats and as a scenario for the possibility of habitat creation within the development aspirations for the site. Although at an early and indicative stage, the masterplan allows for BNG calculations to be generated by the Metric.

2.15. Using the masterplan, which illustrates the footprint of proposed development parcels, amenities, and infrastructure provision, the loss of habitat can be assessed and quantified, and the areas of habitat to be retained can be calculated. These are entered into the Metric to provide a value for the Habitat Units and Hedgerow Units to be lost as a result of the development.

2.16. The masterplan was then used to calculate the extent of each habitat type that is to be created and this information was entered into the Site Habitat Creation section of the tool, along with values for the equivalent parameters as described above, to give a post-intervention value for Habitat and Hedgerow Units.

2.17. A comparison of the baseline Habitat and Hedgerow Unit figures and the post-intervention figures then provides a figure for percentage net change in Biodiversity Units, positive or negative.

Limitations

2.18. As the masterplan is not in the detailed design stage, all the area measurements of the habitat parcels are approximate. Once the design is detailed, the numbers produced by the Metric are likely to change. It is anticipated that the layout of the development will change as further information is provided and assessed. As this level of detail is provided, the retained and created habitats onsite could be proposed to change, which will affect the Metric calculations.

2.19. The documents are designed to provide a high level and indicative overview of the post development habitats. Thus, at this stage it cannot be used to inform an exact value for the BNG calculation. Therefore, the outcomes should still be considered to be estimates and these will need to be refined at future stages However, it is considered that the degree

of accuracy is acceptable to be able to inform the likelihood that the site will result in a loss or gain of biodiversity value and the rough scale of that change.

2.20. It should be borne in mind that the Biodiversity Metric 2.0 does not use species explicitly. Instead, it uses broad habitat categories as a proxy for the biodiversity 'value' of the species communities that make up different habitats. The Metric does not affect the legal obligations associated with protected species and this is beyond the scope of Biodiversity Metric 2.0.

3.0Results

Baseline

3.1. In total, 43 habitat parcels were identified, mapped, classified and measured by area (hectares), and 34 hedgerows were identified, classified, mapped and measured by length (kilometres) (calculations are available within a separate Biodiversity Metric 2.0 spreadsheet). Figure 1 shows the habitat parcels, as mapped, and Figure 2 shows the hedgerow parcels.

Figure 3: Hartley Gardens UK Habitat Classification map

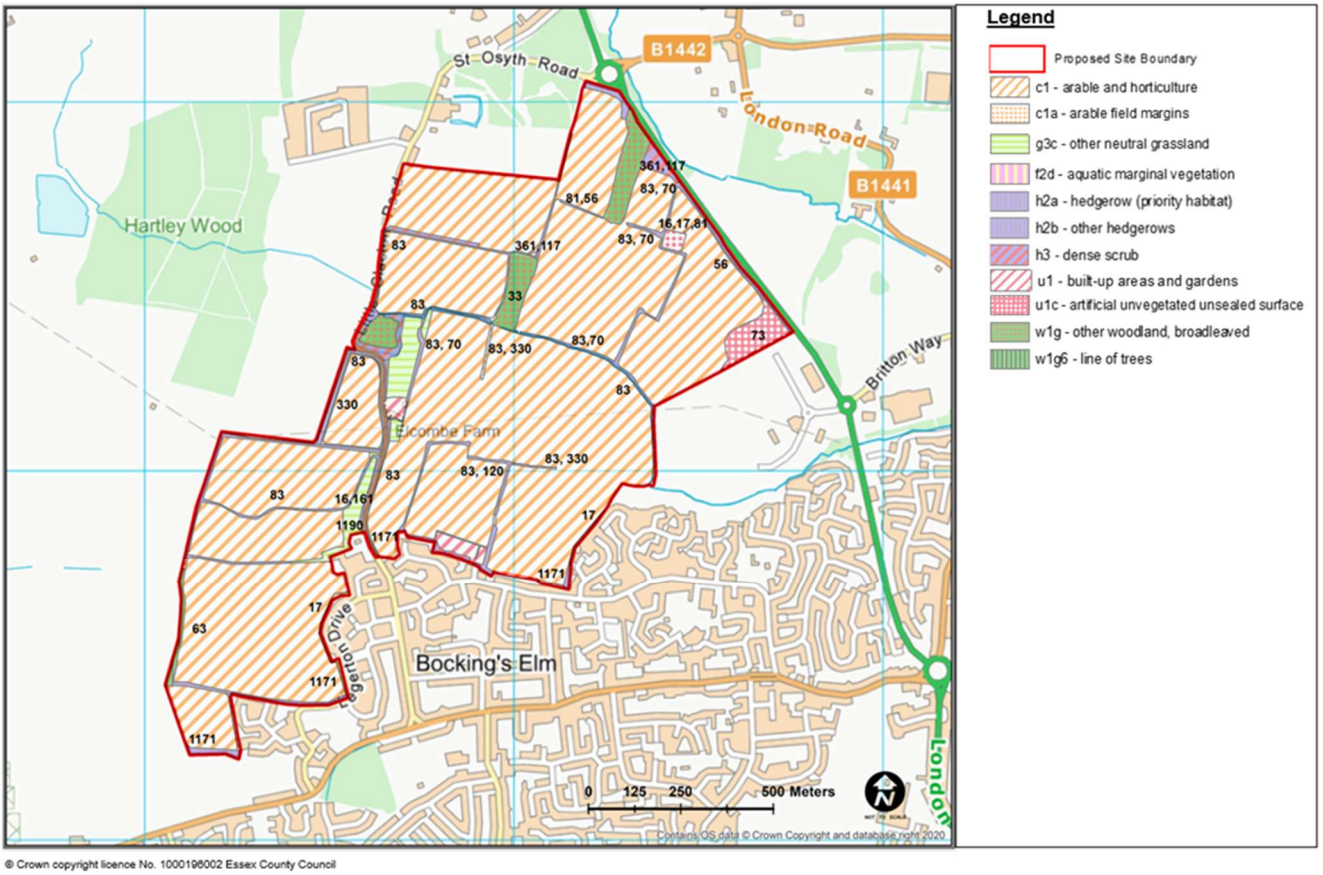
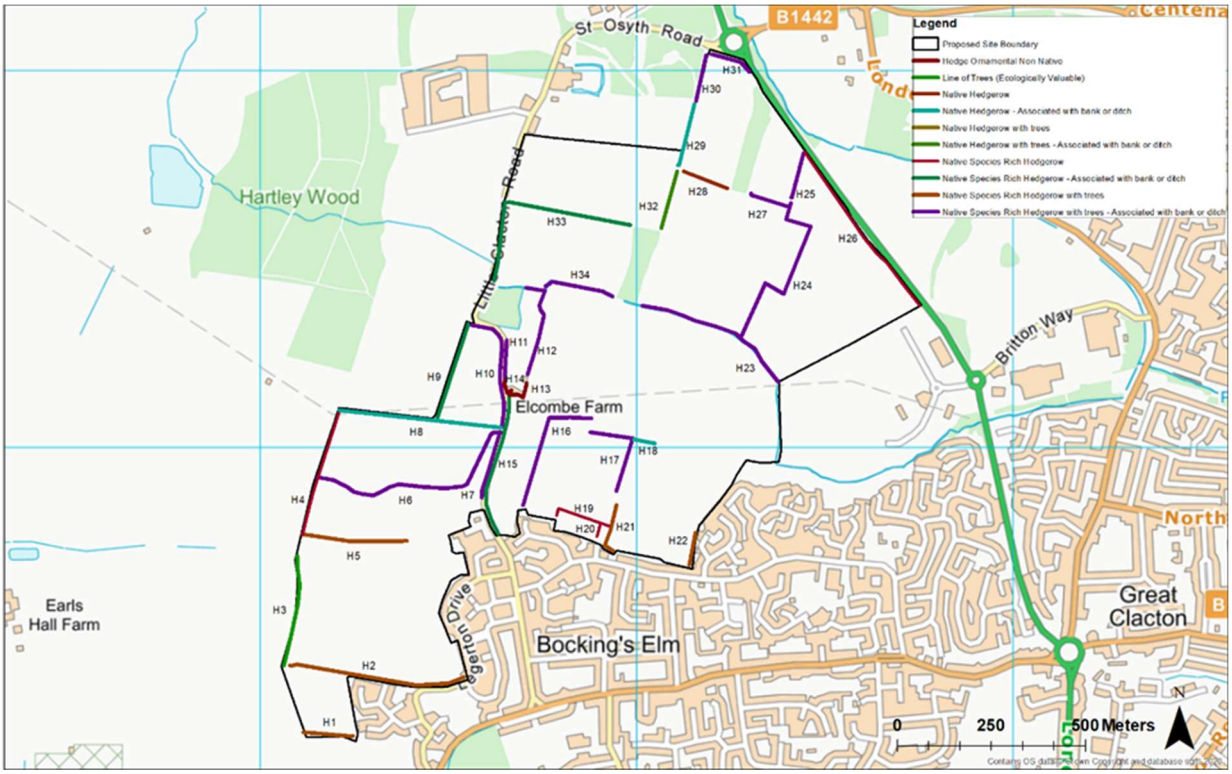


Figure 4: Hartley Gardens hedgerow parcel map



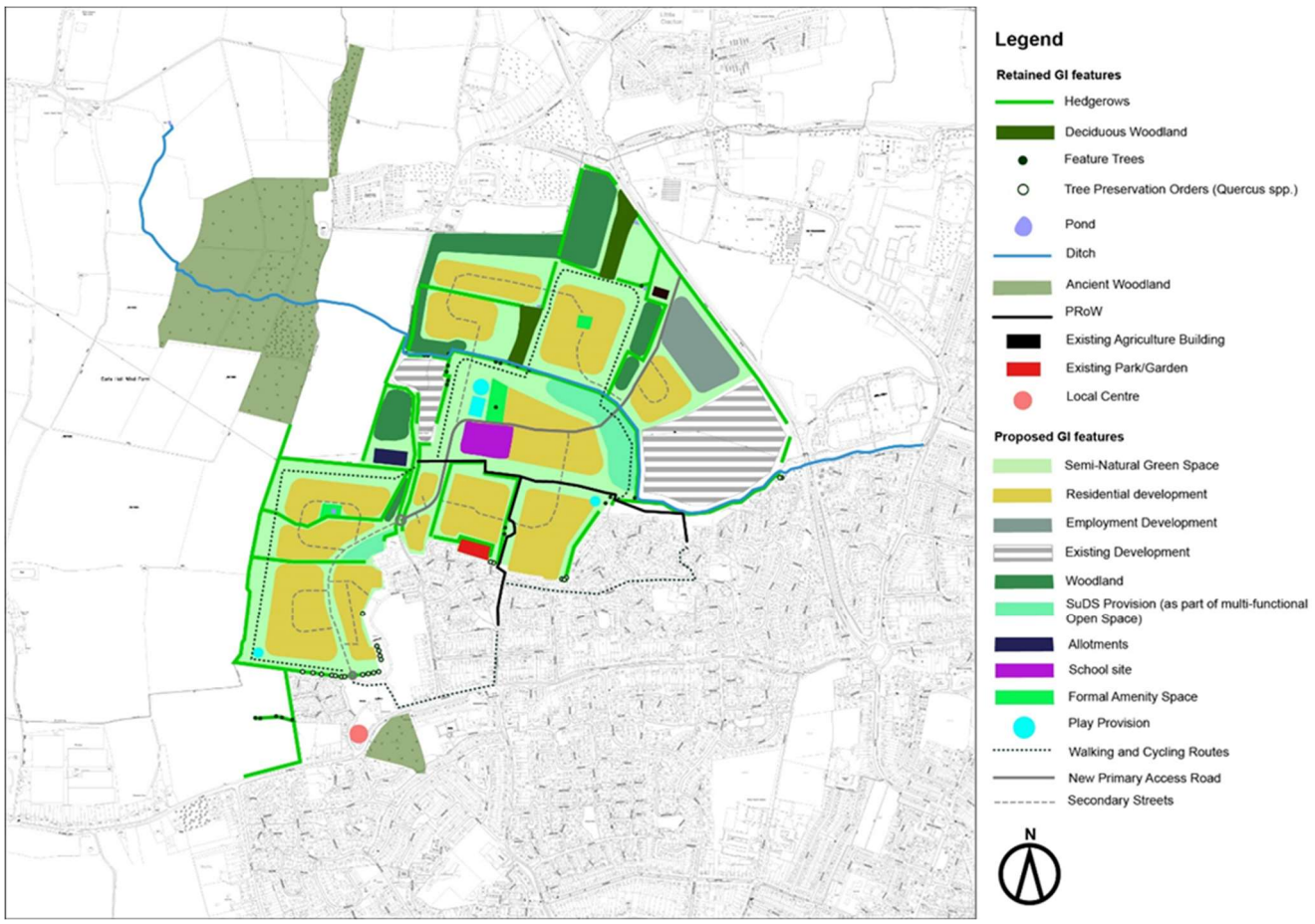
3.2. The habitats on site are described in detail within the Preliminary Ecological Appraisal report for this site. It is predominantly an open arable farmland area situated immediately north of the urban area of Clacton and divided by hedged field boundaries. Key ecological features of the site are the hedgerows and two parcels of old woodland: Long Grove and T Grove. Hartley Woods (Ancient Woodland and Local Wildlife Site) is located directly to the north west of the site and Hartley Brook extends from this wood across the site to join Pickers Ditch in the south east corner.

3.3. The Metric calculations show a baseline Habitat Units value of 286.98, of which 212.2 units are from the agricultural cropland at two units per hectare. Existing old woodland provides 35.53 units with small unit numbers from urban, grassland and scrub habitats. The Metric calculations show a baseline Hedgerows value of 118.49 units, equivalent to 8.51 kilometres of hedge.

Impact Assessment

3.4. The Illustrative Green Infrastructure Plan used to assess the impact of the development and calculate the possible elements of habitat creation is shown in Figure 3.

Figure 5: Hartley Gardens Green Infrastructure Illustrative Plan



3.5. The plan indicates the retention of the existing woodland blocks, several small sections of grassland and various other minor habitat blocks, amounting in total to 54.58 habitats units. This means the loss of 232.41 units, of which 212.2 refer to cropland and most of the remainder represent grassland and scrub.

3.6. A total of 111.49 Hedgerow units will be retained, equivalent to 8.08 kilometres of existing hedge. Only 6.25 units will be lost, derived from the loss of 0.43 kilometres of existing hedge. No hedgerows will be completely removed. However, 10 hedgerows will require partial removal to provide access by provision of roads, road junctions, cycleways and footpaths

3.7. For standardisation, and as a precautionary approach, where the hedgerow was to be severed by a footpath, this was calculated as a 10m severance. Where the hedgerow was severed by a road, the severance was calculated as 20m. Extra loss was estimated in the case of H26, the hedgerow bounding the A133, which is likely to be more severely affected by the need for visibility splays at the main road junction.

Habitat Creation

3.8. The Illustrative Green Infrastructure Plan proposes a layout driven by the intention to create a robust green network around which the development can be designed, bearing in mind ecological and landscape constraints. It includes the creation of 13 hectares of lowland mixed deciduous woodland, 19 hectares of neutral grassland and a sustainable urban drainage feature covering 5.5 hectares.

3.9. For the purposes of the calculation, it is assumed that the condition of the created habitats will be good, which will require a rigorously applied management plan process post development, with appropriate monitoring and mechanisms for the remediation of poor performance.

3.10. The sections below set out considerations and assumptions applied to creation in each habitat type.

Buildings and vegetated gardens

3.11. At this stage it is not possible to know the precise details of the habitat areas within the development parcels urban uses. Possible natural habitats within the development blocks include street trees, public open space, drainage features and road verges, all of which could be designed to provide semi-natural habitats with opportunities for biodiversity. Even amenity grassland and landscape planting will provide habitat units, although the actual benefit to biodiversity would be low in reality.

3.12. An allowance has been made for the creation of 15 hectares of vegetated gardens in the development parcels, although the exact figure is unknown at present. This amounts to 53.08 units.

Woodland

3.13. The 13 hectares of woodland fall in seven new woodland blocks and all have been allocated in the Metric to 'Other woodland, broadleaved', as the achievement of this habitat to target condition is more certain and quicker than would be the more ambitious Lowland Mixed Deciduous Woodland Priority Habitat, with a consequently higher number of habitat units. In practice, the measures taken to establish and manage the new woodland would not be any different. The creation of this woodland delivers 36.77 units.

Grassland

3.14. All newly created grassland on site has been set at 'Other neutral grassland' rather than 'Lowland Meadow' for the same reasons of time and certainty. As with woodlands the specification for, and management of, of the habitat would be the same in practice, but the greater certainty and reduced timescale for target condition results in a higher number of

units. In practice, some of this grassland area may end up being amenity grassland depending on its function in the landscaping plans, which would provide a lower unit figure. Grassland habitat creation generates 146.97 habitat units.

SuDS and Ponds

3.15. The calculations are based upon a single 5.5 hectare 'Sustainable urban drainage feature', as identified as a category in the Metric. In practice, the area identified in the Green Infrastructure plan could include a complex of drainage features and other semi-natural habitats, the components of which might score more highly in unit terms than the 20.35 units generated by the classification that has been used. The design of the SUDS should aim to include habitats of high biodiversity value where they are compatible with the overall drainage function.

3.16. The creation of additional wetland features, such as ponds and swales, within the development parcels would provide additional habitat units if they were designed in an appropriate manner, with pollution prevention, suitable profiles and native planting.

Hedgerows

3.17. The Green Infrastructure Plan includes the addition of 660m of Native Species-rich Hedgerow, which amounts to only 3.32 hedgerow units. A more detailed plan may provide opportunity for additional hedge planting, including within the development parcels. Approximately 2km of additional hedgerow planting would be needed to achieve 10% net gain in Hedgerow units.

Habitat Enhancement

3.18. Alongside the creation of new habitats, the net gain calculation has assumed the enhancement of all retained habitats and hedgerows that are not already in good condition. This is considered to be a reasonable assumption, but would require a detailed plan of protection and management to be enacted during and following construction, based upon the measures necessary to achieve the change in condition required by the assessment methodology used in the Metric calculations.

Biodiversity Net Gain

3.19. With the inclusion of all of the measures set out above, the Metric calculation currently indicates a net change, a gain, of 5.7% in Habitat units and 2.91% in Hedgerow units, both elements falling short of the desired 10% gain. The figures are set out in Table 2.

Table 2 – Biodiversity Metric calculation summary

	Habitat Type	Units
Baseline	Habitat	286.98
	Hedgerow	118.49
Post intervention	Habitat	303.33
	Hedgerow	121.93
Total net unit change	Habitat	16.35
	Hedgerow	3.44
Total net percentage change	Habitat	5.7%
	Hedgerow	2.91%

4.0Recommendations and Conclusions

4.1. The Hartley Gardens Illustrative Green Infrastructure plan has been led by a landscape and biodiversity approach. It aims to protect and enhance existing biodiversity as much as possible and to create new habitats and features to provide a biodiversity net gain. BNG has been calculated using the Biodiversity Metric, but the ecologists have still been able to ensure that ecological functionality is provided across the site.

4.2. It has been shown from the Metric that it would be difficult to provide at least 10% BNG within the current development area and with the existing split of development parcels and green infrastructure. However, the parameters of the Metric calculation suggest that there are options that could be followed in order that 10% BNG. The four main options would be:

- Adding area to the growth location for additional habitat creation;
- Reducing the amount of development land in the existing growth location area;
- Utilising land within the development parcels for habitat creation;
- Off-site habitat creation or enhancement.

4.3. The simplest way of achieving 10% BNG would be to extend the boundary of the growth location to include additional area, which would then permit the creation of further habitat. The selection of this area could be used to achieve significant benefits at a wider landscape scale.

4.4. For example, by including land to the west of the current site, up to Hartley Wood a significant improvement to the setting of the wood could be achieved, while also providing additional development area. This area of 21 hectares would have a baseline value of 42 Habitat units. As a simple illustration, creating three hectares of additional woodland, three hectares of scrub and three hectares of grassland as an extension and buffer to the existing Ancient Woodland, 62.55 Habitat Units would be delivered, shifting the calculation to and 11.22% gain in Habitat Units and leaving 11 hectares for other uses. The additional land take would also provide scope for the creation of the additional two kilometres of hedgerow that would be needed to achieve 10% gain in Hedgerow Units.

4.5. An alternative approach would be to reduce the extent of the development parcels to provide additional land for habitat creation. Providing an additional two hectares of neutral grassland or three hectares of broadleaved woodland would be enough to achieve 10% net gain in Habitat Units. Achieving the same for Hedgerow Units would be more difficult with this approach.

4.6. The addition of further semi-natural habitats with the development areas has the potential to provide additional Habitat and Hedgerow units, although such gains cannot be quantified at the current time with the level of detail available. This could extend to additional urban habitats such as green roofs, urban woodlands and rain gardens alongside more typical verges, street trees and gardens, all of which could have multiple benefits.

4.7. As well as securing onsite biodiversity net gain, the calculation also allows for off-site habitat creation and enhancement measures to be included. This would necessitate the identification of an amenable landowner with a parcel of land suitable for the creation of the desired habitat. For this site, the habitat creation requirements are not restricted by the need for equivalence, other than the need for two kilometres of hedgerow. It may be less acceptable from a policy point of view to consider off-site net gain, with a need to establish parameters of proximity and permanence that satisfy those stakeholders involved.

5.0References

Natural England (2019c) The Biodiversity Metric 2.0 Auditing and Accounting for Biodiversity Technical Supplement Beta Edition (**http://publications.naturalengland.org.uk/publication/5850908674228224**)

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