



TUNLEY
ENVIRONMENTAL

BIODIVERSITY NET GAIN ASSESSMENT REPORT

TRUSTED SUSTAINABILITY SCIENTISTS

BIODIVERSITY NET GAIN ASSESSMENT REPORT

FOR

**54 Crowland Road, Suffolk, CB9
9LF**

**in collaboration with
Rostock Properties**

Contents

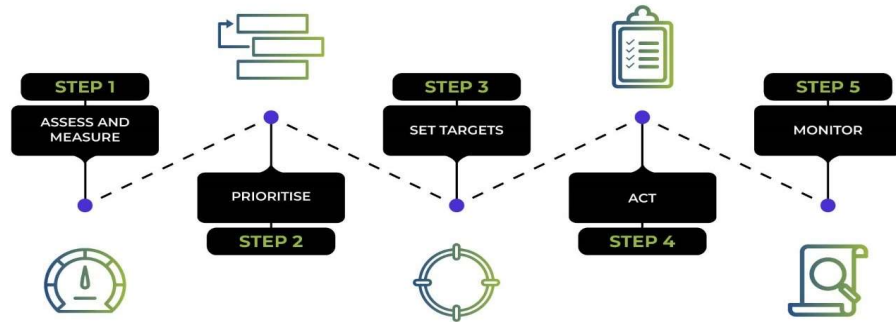
Nomenclature	3
Methodology and Quantification Standards	4
Executive Summary	5
Introduction	6
Baseline Results (Pre-development)	7
Biodiversity Net Gain Results	11
Off-site BNG units evidence	15
Conclusion	16
Appendix	17
Data Sources	17
Habitat Classification and Justification	17
Magic Map Results	17
Approval	18
IMPORTANT NOTICE:	20

Nomenclature

Nomenclature	Description
Baseline Assessment	Before a development project begins, a baseline assessment is conducted to determine the existing biodiversity of the project site. This assessment establishes the current state of habitats, species, and ecosystem functions.
Biodiversity	The variety of life within a defined area for example, globally or in a specific habitat which can be described by a variety of metrics including species abundance or the living plant index and which we are dependent on to provide us with food, clean water and many more essentials.
Biodiversity Loss	The reduction in the variety and abundance of species in a particular ecosystem or across the entire planet. It can result from factors such as habitat destruction, pollution, climate change, and invasive species.
Biodiversity Net Gain	A concept that aims to ensure that development projects have a positive impact on biodiversity by enhancing or creating habitats.
Biodiversity Net Gain (BNG) Assessment	The quantification of the overall positive impact on biodiversity resulting from a specific activity or project. While biodiversity gain refers to the increase in the numbers, genetic variability, and species variety in a given area, BNG goes a step further by assessing whether the difference between biodiversity losses and gains leads to a net positive impact.
Biodiversity Units	A measure to describe the level of biodiversity present on a given site.
DEFRA Statutory (Official) Biodiversity Metric	Is a tool developed by the UK Government that provides a standardised approach to quantifying changes in biodiversity resulting from development activities. It assigns values to different habitats and species based on their ecological importance, and it allows for the calculation of a numerical score that reflects the overall biodiversity impact of a development.
Habitat	The specific environment or type of ecosystem in which a particular species of organism lives. Habitats can range from forests and wetlands to grasslands and urban areas.
Habitat Condition	The state or quality of a habitat, taking into consideration factors such as biodiversity, ecological processes, and overall health. Habitat condition assessment is essential in determining the effectiveness of conservation or restoration efforts.
Habitat Distinctiveness	The unique characteristics and features that differentiate one habitat from another. Distinctiveness is often assessed based on the diversity of species, ecological functions, and physical attributes of a habitat.
Habitat Strategic Significance	The local importance of a habitat determined by assessing both its geographic location and the specific type of habitat it represents. This evaluation helps in understanding the unique value and contribution of the habitat in its surrounding ecosystem.
On-Site	Refers to activities, impacts, or features that occur within the boundaries of a specific development or project site. In the context of Biodiversity Net Gain, on-site measures may include habitat creation, enhancement, or protection within the project area.
Off-Site	Relates to actions or effects that occur outside the boundaries of the development or project site. Off-site measures in Biodiversity Net Gain may involve compensatory actions, such as creating or enhancing habitats in a different location to offset any biodiversity loss caused by the development.
Small Site	A small residential site is a development which is less than 1 hectare with less than 9 dwellings, or where the number of dwellings is unknown an area of less than 0.5 hectares. A small commercial site is a development which has created floor space of less than 1,000 m ² or with a total site area of less than 1 hectare.
Major Development	A major development is any development, either residential or non-residential, which falls out of the requirements of a small site. This means more than 9 dwellings or greater than 0.5 hectares for residential developments or greater than 1,000 m ² floor space, or over a hectare for non-residential developments.

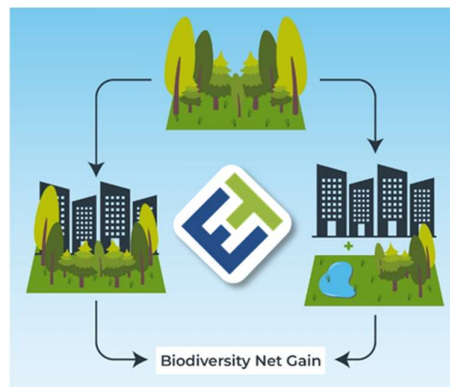
Methodology and Quantification Standards

This Biodiversity Net Gain (BNG) report has been completed using methodology consistent with the Science Based Targets for Nature (SBTN), Nature Positive Initiatives, and DEFRA Regulations.



Science-Based Targets for Nature Steps which Tunley Environmental's Biodiversity Net Gain (BNG) services aligns with to achieve reduced impact on Nature.

Biodiversity was quantified using the DEFRA (Department for Environment, Food & Rural Affairs) statutory (official) biodiversity metric as a tool to assess and measure biodiversity in the context of development projects. This metric is specifically designed to assist in quantification of the impact that development activities have on biodiversity and determine whether Biodiversity Net Gain (BNG) is achieved. Where BNG refers to the idea that the biodiversity value of a site should be enhanced due to development, ensuring a "net gain" in ecological terms. Tunley have completed all calculations within small site metric along with any required documents such as habitat condition. These additional documents will be submitted alongside this form in the excel format for LPA approval.



Tunley Environmental's conceptualisation of Biodiversity Net Gain.

Where applicable, the equivalent small site biodiversity metric was utilised for developments under the requirements for the statutory (official) biodiversity metric. The BNG assessment was further completed using methodology consistent with the international standard BS 8683:2021 (Process for designing and implementing BNG). Information on data sources and assumptions made to support this analysis are provided in Appendix A.

Executive Summary

Biodiversity is the foundation of the global economy. The World Economic Forum (WEF) estimates that over 50% of the world's GDP, equivalent to 33 trillion pounds, significantly depends on nature and the services it provides. However, biodiversity is amid a severe global crisis. Human-induced changes in land and sea use, overexploitation, invasive species, pollution, and climate change are the primary drivers of rapid biodiversity decline. Human activity threatens approximately a million species with extinction, some within decades, and species are disappearing at a rate of tens to hundreds of times faster than the natural pace.

Biodiversity net gain is a concept implemented into the *Town and Country Planning Act 1990* that aims to ensure that development projects in the UK, specifically England, have a positive impact on biodiversity by enhancing or creating habitats either on-site or off-site.

The site at 54 Crowland Road, Suffolk, CB9 9LF is a predominantly Urban residential site, and has been analysed within the Defra Magic Map for proximity to priority habitats and designations, which are illustrated in the [Magic map section of the Appendix](#). However, Tunley have calculated all analysis within the Statutory metric as the client will need to purchase offsite BNG credits to reach 10% net gain for area habitats.

Tunley Environmental have conducted an independent assessment to quantify the biodiversity value of the site before and after development to assess biodiversity of the site. Using data provided by Rostock Properties the baseline 'area habitat' biodiversity units of the site were calculated to be 0.089 units over an area of 536m². This is comprised of developed land; sealed surface and vegetated garden. The baseline 'hedgerow habitat' biodiversity units of the site were calculated to be 0.013 units. This is comprised of non-native and ornamental hedgerow.

Within the proposed development there are plans to create sustainable drainage system, developed land; sealed surface, vegetated garden and non-native and ornamental hedgerow. These initiatives will create 0.01 'area habitat' units and 0.03 'hedgerow habitat' units translating to a **-10.38% net loss in 'area habitats'** and **24.34% net gain in 'hedgerow habitat' units**.

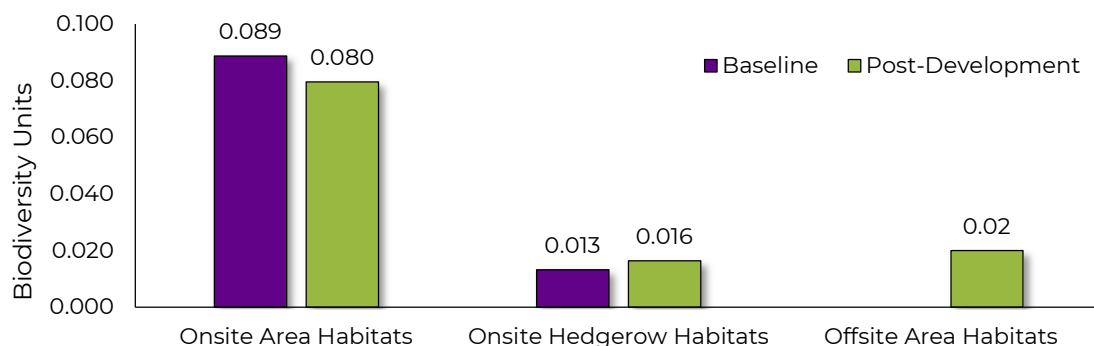


Figure 1. Total biodiversity units of the site, before and after development, including off site BNG unit purchased by Rostock Properties.

Introduction

Biodiversity is the foundation of the global economy. The World Economic Forum (WEF) estimates that over 50% of the world's GDP, equivalent to 33 trillion pounds, significantly depends on nature and the services it provides. However, biodiversity is amid a severe global crisis. Human-induced changes in land and sea use, overexploitation, invasive species, pollution, and climate change are the primary drivers of rapid biodiversity decline. Human activity threatens approximately a million species with extinction, some within decades, and species are disappearing at a rate of tens to hundreds of times faster than the natural pace. Between 1970 and 2016, populations of mammals, birds, amphibians, reptiles, and fish have, on average, decreased by 68%. Human activity has dramatically altered 75% of the land surface, significantly impacted 66% of the ocean, and led to the loss of 85% of wetlands.

Recognising the severity of this crisis, the integration of Biodiversity Net Gain (BNG) and ecosystem restoration emerges as a crucial strategy for mitigating the adverse effects of human activities on biodiversity. BNG aims to ensure that development projects not only avoid causing harm to ecosystems but actively contribute to a net positive impact on biodiversity. By implementing measures such as habitat creation, restoration, and protection, BNG seeks to counterbalance the negative ecological footprint of development.

The particular site in question, which is a single dwelling residential property with green space to the left of the property and a back garden. The plans propose the addition of a new residential dwelling on the green space left of the original dwelling. The site is situated in Suffolk. Rostock Properties have been asked to provide a Biodiversity Net Gain (BNG) assessment alongside the application.

Tunley Environmental has conducted an independent BNG assessment to identify and quantify the biodiversity of the site before and after the development. This BNG assessment calculates the biodiversity value of the land by evaluating the number of habitats present, the habitat types, size, condition, and location. These data inputs are utilised within the small site's statutory metric, due to the development size, to quantify the biodiversity units present before development. This is the baseline habitats and gives a value for baseline biodiversity units.

Below shows the most recent aerial image of the site at 54 Crowland Road (Figure 2).

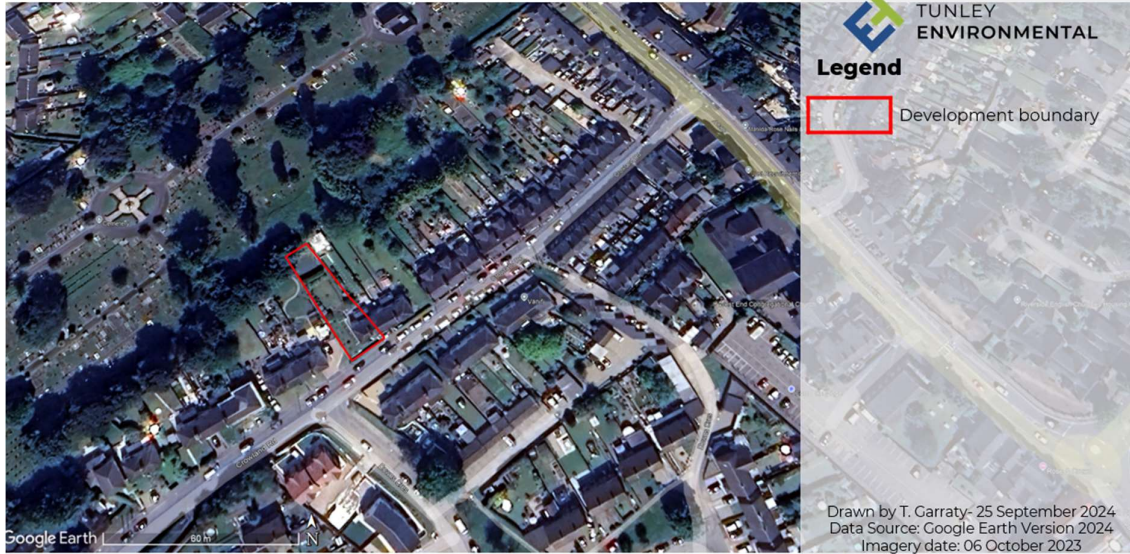


Figure 2. Aerial image of the site at 54 Crowland Road

Baseline Results (Pre-development)

Prior to analysing the biodiversity units post development we must conduct a baseline assessment on the site pre-development. This baseline assessment is conducted to determine the existing biodiversity on the project site. This assessment establishes the current state of habitats, species, and ecosystem functions.

The baseline assessment for the site at 54 Crowland Road was conducted by analysing site photos to distinguish habitat types as well as implementing Google Earth to accurately analyse site plans alongside dimensions to yield overall meters of the project site by habitat type. Some example images are shown in **Figure 3**.

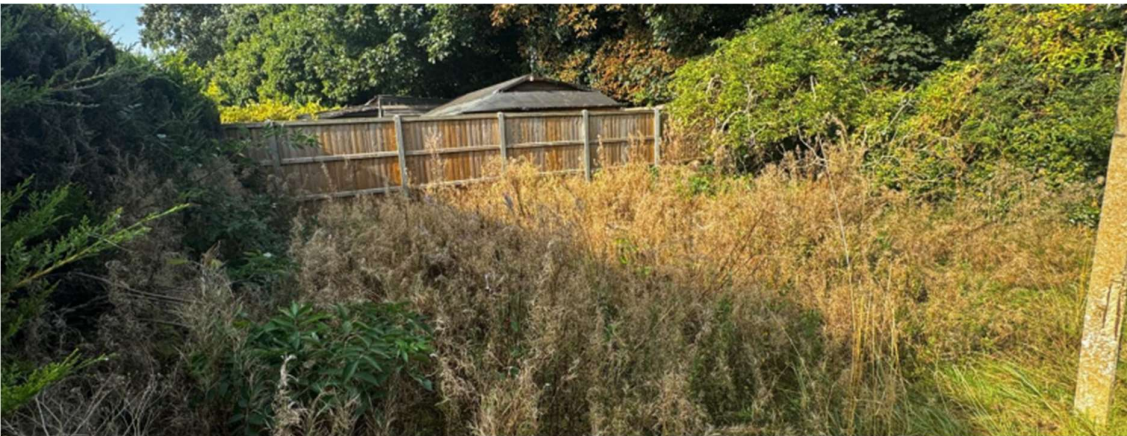
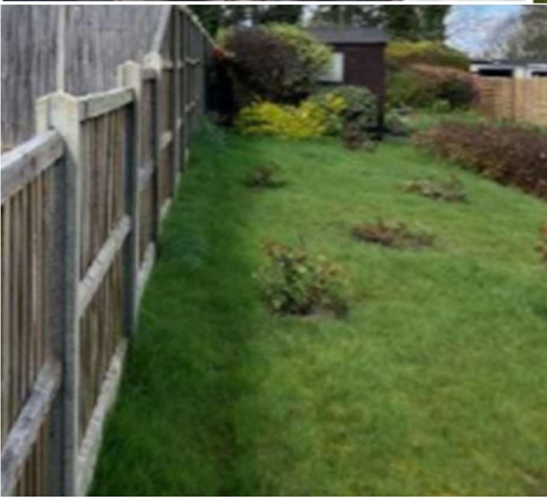




Figure 3. Example images provided to Tunley by Rostock Properties of the site.

A map of the habitats identified from these images is overlaid into the aerial image above in **Figure 4**.



Figure 4. Aerial view separated by different habitat types identified on site pre-development.

For the proposed site for development, 'area habitats' and 'hedgerow habitats' biodiversity units were identified pre-development (Figure 4 and

Table 1). The [UK habitat classification \(UKHab\)](#) system is utilised to define habitats inputted within the metric. The different 'habitat types' identified on-site for this project included developed land; sealed surface and vegetated garden, with 346.81 m² of vegetated garden contributing the greatest area.

Table 1. Explanation of baseline habitat types, habitat characteristics, and habitat area/length.

Habitat Type	Habitat Characteristics	Habitat Area	Unit	Condition	Biodiversity Units	Retained Area	Lost Area
Developed land; sealed surface	Areas where the surface has been sealed by materials such as concrete, tarmac, or buildings.	120.77	m ²	N/A - Other	0.00	114.00	6.77
Vegetated garden	Gardens that support a variety of plants.	346.91	m ²	Condition Assessment N/A	0.07	273.61	73.30
Introduced shrub	Shrubs that have been planted and are not native to the area.	39.82	m ²	Condition Assessment N/A	0.01	28.12	11.70
Ruderal/Ephemeral	Early successional habitats typically found on disturbed soils, often with a high cover of annual species.	28.50	m ²	Moderate	0.01	28.50	0.00
Non-native and ornamental hedgerow	A hedgerow with >20% canopy cover of UK non-native woody species.	13.17	m	Poor	0.01	7.69	5.48

Biodiversity Net Gain Results

The site at 54 Crowland Road aims to consider biodiversity impact by implementing habitat enhancement and habitat creation to account for any biodiversity net loss due to construction, as well as to improve the site for the users of this site whilst still contributing to BNG goals.

The plan below (Figure 5) shows the proposed site landscape developed and designed by Rostock Properties which retains 0.04 ha of its 0.05 ha area habitats and includes the design and implementation of sustainable drainage system, vegetated garden and non-native and ornamental hedgerow.

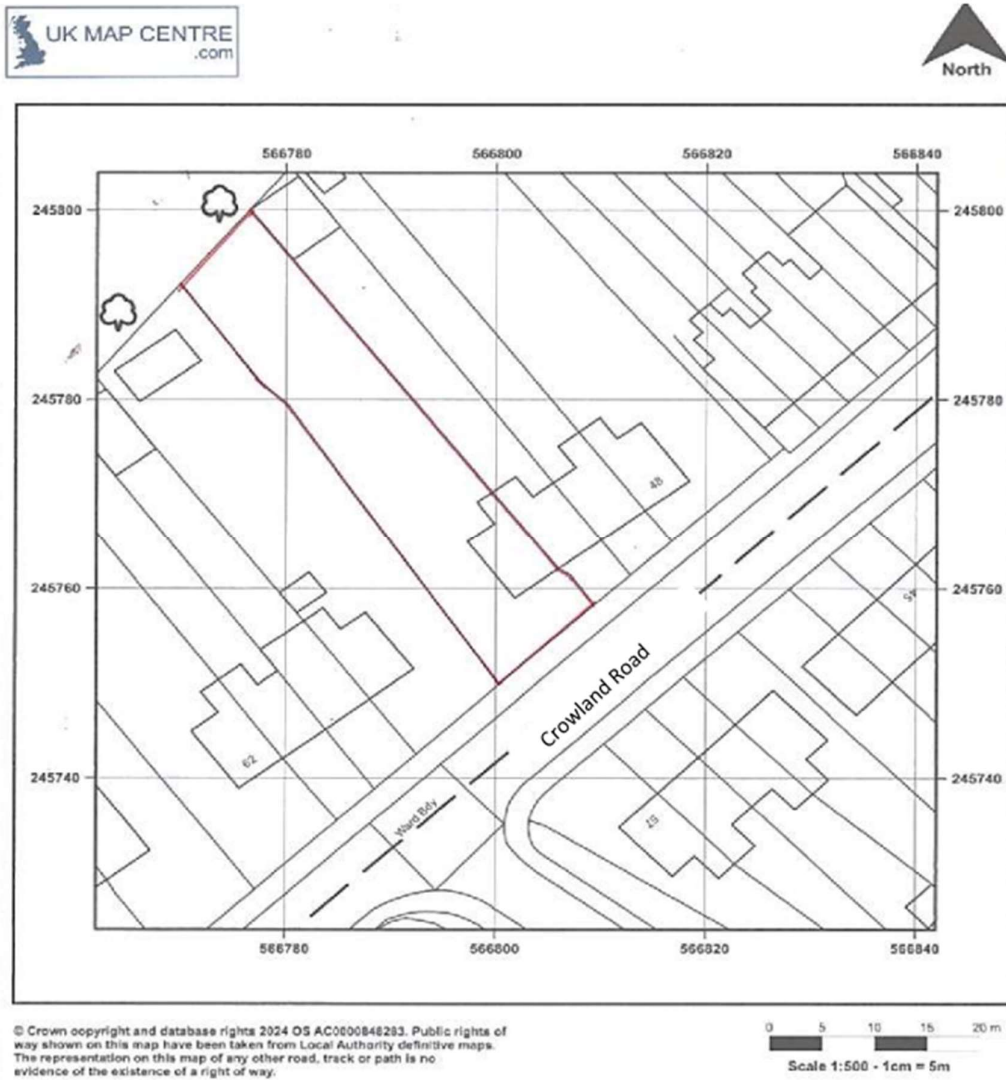


Figure 5. Proposed plan for the site. Land directly behind development redline is not part of property as it is land owned by the cemetery behind the property.

These changes in habitats were taken into account through the calculation of their areas, provided by Rostock Properties and verified with an aerial view map, as seen in Figure 6.



Figure 6. Aerial view of the site of post-development.

Of the 0.01 ha area 'habitats' that will be lost during development, the plan creates a variety of different area 'habitats' in its stead (Table 2).

Table 2. Explanation of habitat type, habitat characteristics, and habitat area of all habitats to be created post-development.

Habitat Type	Habitat Characteristics	Habitat Area	Unit	Condition	Biodiversity Units
Developed land; sealed surface	Areas where the surface has been sealed by materials such as concrete, tarmac, or buildings.	58.10	m ²	N/A - Other	0.00
Sustainable drainage system	Engineered structures designed to manage stormwater and reduce surface runoff.	26.90	m ²	Moderate	0.01
Vegetated garden	Gardens that support a variety of plants.	6.77	m ²	Condition Assessment N/A	0.00
Non-native and ornamental hedgerow	A hedgerow with >20% canopy cover of UK non-native woody species.	9.00	m	Poor	0.01

The incorporation of these new habitats creates 0.01 biodiversity units, which brings the site to a total of 0.080 biodiversity units post-development, translating to -10.38% net loss in biodiversity for area habitats. (see Table 3).

Table 3. Detailed losses and gains of biodiversity 'area habitat' units resulting from development.

Description of modifications	Losses & Gains of Biodiversity units
Total on-site baseline biodiversity area habitat units	0.09
On-site retention of baseline biodiversity 'area habitat' units - 114 m ² of developed land; sealed surface in n/a - other condition - 273.61 m ² of vegetated garden in condition assessment n/a condition - 28.12 m ² of introduced shrub in condition assessment n/a condition - 28.5 m ² of ruderal/ephemeral in moderate condition	0.07
On-site loss of baseline biodiversity 'area habitat' units - 6.77 m ² of developed land; sealed surface in n/a - other condition - 73.3 m ² of vegetated garden in condition assessment n/a condition - 11.7 m ² of introduced shrub in condition assessment n/a condition - 0 m ² of ruderal/ephemeral in moderate condition	-0.02
On-site creation of area habitats (all low strategic significance): - 58.1 m ² of developed land; sealed surface in n/a - other condition - 26.9 m ² of sustainable drainage system in moderate condition - 6.77 m ² of vegetated garden in condition assessment n/a condition	+0.01
On-site enhancement of area habitats (all low strategic significance):	+0.00
Total on-site post-development biodiversity 'habitat' units	0.08
Total net gain in biodiversity 'habitat' units	-0.01
Overall percentage net change in biodiversity 'habitat' units	-10.38%

Within 'hedges and lines of trees' habitats, 0.01 units are created in the development plans, which bring the site to a total of 0.02 biodiversity units post-development, translating to a 24.34% net gain in hedgerow biodiversity. These habitats therefore ensure that the 10% net gain target for biodiversity will be met (Table 4).

Table 4. Detailed losses and gains of biodiversity 'hedgerows and lines of trees' units from development.

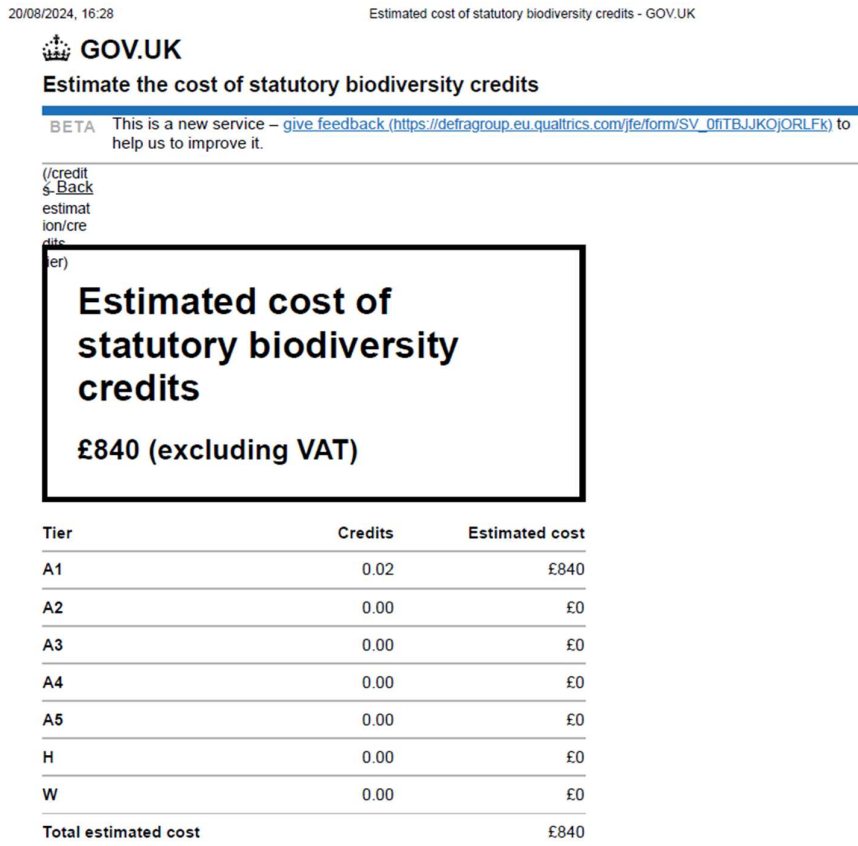
Description of modifications	Losses & Gains of Biodiversity units
Total on-site baseline biodiversity 'hedgerow' units	0.01
On-site retention of baseline biodiversity 'hedgerow' units	0.01
- 7.69 m ² of non-native and ornamental hedgerow in poor condition	
On-site loss of baseline biodiversity 'hedgerow' units	-0.01
- 5.48 m ² of non-native and ornamental hedgerow in poor condition	
On-site creation of 'hedgerow' units	+0.01
- 9 m ² of non-native and ornamental hedgerow in poor condition	
On-site enhancement of 'hedgerow' units	+0.00
Total on-site post-development biodiversity 'hedgerow' units	0.02
Total net gain in biodiversity 'hedgerow' units	+0.00
Overall percentage net change in biodiversity 'hedgerow' units	+24.34%

Off-site BNG units evidence

Rostock Properties is committed to complying with BNG regulations. Whilst they are not able to reach onsite BNG for area habitats with a unit deficit of 0.02, they will purchase offsite area habitat units to reach 10% area habitat net gain. Evidence of BNG unit quote can be found in Figure 7.

Figure 7 Evidence of BNG Credits commitment from RoStock Properties

Rostock Properties will demonstrate BNG national compliance by purchasing 0.02 BNG credits. The BNG calculations provided by Tunley Environmental have been done in the Statutory Metric so the credit seller may provide the final details on the offsite units for LPA review.



Conclusion

The BNG assessment by Tunley Environmental have confirmed the site at 54 Crowland Road, Suffolk, CB9 9LF will reach the national standard of 10% biodiversity net gain by purchasing off site habitat area units to address the **0.02 unit deficit** for 'habitats'. The site has reached the national standard for hedgerow biodiversity net gain by way of onsite habitat creation which resulted in **24.34% net gain** for 'hedges and lines of trees'.

BNG approaches offer a pathway to not only safeguard the intricate web of life on Earth but also to preserve the essential ecosystem services that underpin the global economy and human prosperity. As the urgency of addressing biodiversity loss intensifies, a comprehensive strategy that integrates conservation, sustainable development, and restoration efforts is essential to ensure a resilient and biodiverse future for the planet.

Appendix

Data Sources

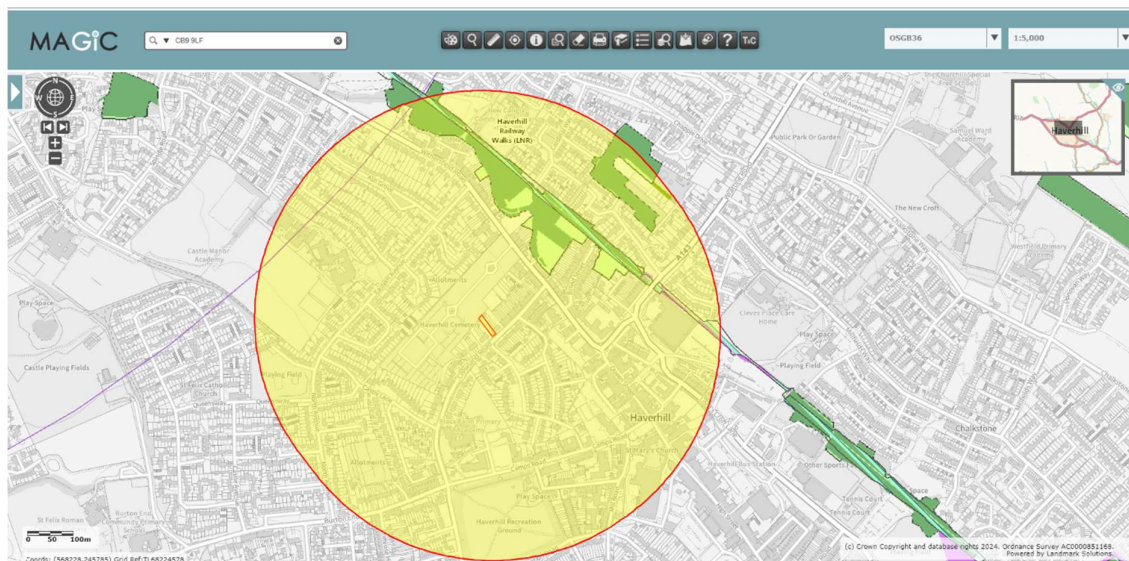
All data results were analysed through the small site metric from DEFRA. The excel version of the metric will also be submitted alongside this report for further evidence and LPA approval and for compliance with BNG regulations.

Habitat Classification and Justification

We conducted a thorough assessment of all habitat types utilising the guidelines outlined in "The UK Habitat Classification Version 2" (UKHab). UKHab serves as a comprehensive, hierarchical system that integrates seamlessly with existing classifications in the UK and Europe. It's architecture, inclusive of primary habitats and secondary codes, enhances the accuracy and consistency of habitat assessments by allowing for the direct attachment of additional features such as habitat mosaics and management strategies. This approach not only facilitates the integration of legacy datasets but also enables efficient sharing of habitat data at regional, national, and international levels. BNG Compliance adheres to these classifications, ensuring consistency and compliance with ecological standards. It's essential that a trained and certified ecologist completes the assessment. For more information, please visit: [UKHab](https://ukhab.org/).

Magic Map Results

Within 500m of site boundary there is the Haverhill Railway Walks (LNR), UK priority habitats of deciduous woodland, semi-improved grassland, and traditional orchard. The site also falls within a SSI impact zone of both Over and Lawn Woods (SSSI) and Trendley and Waddell Woods, Great Thurlow (SSSI), however the site is not within 500 metres of the SSSI's. The development is being undertaken in an urban residential area, and is technically classed as a small site, thus the impacts on the overall priority habitats within 500 metres of the site will be minimal.



Approval

Author:	Tara Garraty BSc MSc PhD (pending)
Position:	Biodiversity Specialist and Sustainability Scientist
Written Date:	21 st August 2024
Peer-reviewed by:	Dr Aaron Yeardeley, AMIChemE, MEng
Position:	Science Team Co-Lead
Reviewed Date:	21 st August 2024
QA approved by:	☒ Approved ☐ Revision: N/A Dr Luan Ho, MEnvSc, BEng
Position:	Quality Assurance Manager
Approval date:	21 st August 2024
Reference:	Rostock Properties-BNG_24-2-C
Revision:	C

Revision History:	Change Description:	Changed by:	Date:	Approved by:	Date:
B	Inclusion of introduced Shrub and smaller hedgerow. Updated Figures and calculations	TG	11 th Sep. 24	AY	13 th Sep. 24
C	Exclusion of two hedgerows, updated proposed plan showing development boundary clearly	TG	20 th Sep. 24	LH	20 th Sep. 24
D	Inclusion of Ruderal area and area behind hedgerow in	TG	25 Sep. 24	HF	25 th Sep 24

	garden, updated figures with habitat mapping				
E					
F					

Details of Competency

Tara Garraty, BSc, MSc, PhD (Pending), is a certified ecologist (holding three higher education degrees in conservation and ecology) with over 15 years of experience in sustainability and conservation. She has led ecological surveys in the UK and Tropics, gaining hands-on experience in diverse ecosystems. Tara has completed professional training with Natural England, CIEEM, and UKHab, focusing on Biodiversity Net Gain (BNG) regulations and UK habitat identification. She remains committed to ongoing training to stay current with BNG standards. At Tunley, she created and facilitated “Navigating Biodiversity Net Gain regulations” CPD sessions, showcasing her leadership and expertise in ecology and BNG regulations.

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