



## Biodiversity Net Gain Assessment

Hemel465, Boundary Way, Hemel Hempstead, Herts, HP2 7LF

J. Murphy & Sons Ltd

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### Industry Guidelines and Standards

This report has been written with due consideration to:

- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management, Construction Industry Research and Information Association & Institute of Environmental Management and Assessment (2019). Biodiversity Net Gain – Good Practice Principles for Development.

### Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

## Executive Summary

Arbtech Consulting Limited was instructed by J. Murphy & Sons Ltd to undertake a Biodiversity Net Gain (BNG) Assessment at Hemel465, Boundary Way, Hemel Hempstead, Herts, HP2 7LF (hereafter referred to as “the site”). The assessment was required to inform a planning application for the relocation of existing car parking spaces and the construction of a multi-storey car park, associated infrastructure works, site works, and soft and hard landscaping (hereafter referred to as “the proposed development”).

The baseline habitat value of the site is 0.29 area units, comprising 0.14 units of broadleaved woodland, 0.07 units of scattered trees, 0.03 units of introduced shrub, 0.05 units of vegetated garden and 0 units of hard-standing and building. There is a baseline of 0.16 units of linear habitat comprised of hedgerow.

The post development habitat value of the site (Proposed) is 0.26 area units, comprising 0.14 units of retained woodland, 0.01 units of retained introduced shrub, 0.05 units of retained vegetated garden, 0.04 units of retained trees, 0.02 units of ground level planters and 0 units of buildings and 0 units of hard-standing. There is a post-development habitat value of 0.07 linear units comprised of retained hedgerow.

The current proposed plan results in a **-11.31% net loss** in habitat area units and **-54.19% net loss** of linear units.. Mandatory 10% biodiversity net gain is not achieved.

A scenario is laid out to achieve **+10.18%** net gain of linear units and **+12.44%** area habitat units.

**Content**

**1.0 Introduction and Context ..... 6**

    1.1 Background ..... 6

    1.2 Site Location, Geology and Landscape Context ..... 6

    1.3 BNG Informative ..... 6

**2.0 Methodology ..... 8**

    2.1 Baseline Biodiversity Value ..... 8

    2.2 Post Development Biodiversity Value ..... 8

    2.3 Limitations ..... 9

**3.0 Results ..... 10**

    3.1 Baseline Habitats ..... 10

    3.2 Post Development Habitats ..... 10

    3.3 Change in Biodiversity Value of the Site ..... 11

**4.0 Recommendations to Deliver BNG ..... 12**

    4.1 Discussion ..... 12

    4.2 Post Development ..... 12

**5.0 Bibliography ..... 13**

    Appendix 1: Proposed Development Plan ..... 14

    Appendix 2: Site Location Plan ..... 15

    Appendix 3: Baseline Habitat Plan ..... 16

    Appendix 4: Post Development Habitat Plan (Proposed) ..... 17

    Appendix 5: Headline BNG Results ..... 18

    Appendix 6: Condition Assessments ..... 19

## 1.0 Introduction and Context

### 1.1 Background

Arbtech Consulting Limited was instructed by J. Murphy & Sons Ltd to undertake a Biodiversity Net Gain (BNG) Assessment at Hemel465, Boundary Way, Hemel Hempstead, Herts, HP2 7LF (hereafter referred to as “the site”). The assessment was required to inform a planning application for the erection of seven Oak framed Holiday Lodges, Communal BBQ area, Parking facilities and Access track (hereafter referred to as “the proposed development”). A plan showing the proposed development is provided in Appendix 1.

This report should be read in conjunction with the following documents:

- Statutory Biodiversity Metric – Hemel465, Boundary Way, Hemel Hempstead, Herts, HP2 7LF – Proposed
- Statutory Biodiversity Metric – Hemel465, Boundary Way, Hemel Hempstead, Herts, HP2 7LF – Scenario B
- PEA Report for the site (Arbtech, 2024) – conducted on 16/02/24 by Oliver Bevilacqua, MSc, BSc, Consultant Ecologist

### 1.2 Site Location, Geology and Landscape Context

The site is located at National Grid Reference TL08630 08216 and has an area of approximately 8.141 ha comprising buildings - u1b5, developed land; sealed surface - u1b, built-up areas and gardens - u1, with vegetated garden – 828, introduced shrub – 847, and scattered trees – 32, other broadleaved woodland – w1g, and non-native and ornamental hedgerow – h2b, with trees - 11. It is surrounded by industry to the west and north, with a caravan park to the south and farmland to the east. The wider landscape comprises industry, farmland, housing, woodland. A site location plan is provided in Appendix 2.

### 1.3 BNG Informative

BNG is a specific, measurable outcome of project activities that deliver demonstrable and quantifiable benefits to biodiversity compared to the baseline situation. In order to achieve BNG, a project must be able to demonstrate that it has followed all 10 of the Principles of Biodiversity Net Gain (as outlined in the *British Standard 8683:2021 Process for Designing and Implementing Biodiversity Net Gain*).

The legalised Environment Act (2021) requires developments in England to demonstrate a measurable net gain in biodiversity and sets a target of a minimum of 10% BNG for all developments. It also stipulates that a management plan with a minimum 30-year term, should be adopted to ensure biodiversity net gain can be delivered, which became mandatory in February 2024. The requirement for biodiversity net gain is also enshrined within the National Planning Policy Framework (NPPF, 2021). Furthermore, BNG is a requirement of the City Plan Part 1 Policy CP10 Biodiversity and City Plan Part 2 Policy DM37 Green Infrastructure and Nature Conservation.

The DEFRA Statutory Biodiversity Metric is the widely accepted tool used to calculate BNG. It enables the calculation of habitat value pre- and post-development in order to determine the overall change in biodiversity value as a result of the proposed development. The Biodiversity Metric has separate BNG assessments for areas of habitat, hedgerows and watercourses.

The biodiversity value of a site should be maximised. However, it may not always be possible to achieve a 10% biodiversity net gain within a site and therefore the Statutory Biodiversity Metric can also account for offsite habitat creation, where land is available. Alternatively, developers can seek to provide an agreed financial contribution to an appropriate third party (such as the Local Authority, the UK Government or another landowner) to deliver the required biodiversity net gain elsewhere on their behalf.

## 2.0 Methodology

### 2.1 Baseline Biodiversity Value

The baseline BNG Calculation was informed by Preliminary Ecological Appraisal (PEA) (Arbtech, 2024). A baseline habitat plan is provided in Appendix 3. The BNG assessment has been carried out on the site development area only. Impacts from the proposed development are confined to this boundary and so the BNG assessment does not need to cover the entire land ownership boundary.

#### Habitat Classification

The PEA classified the habitats on site according to The UK Habitat Classification Habitat Definitions Version 2.0 (The UK Habitat Classification Working Group, July 2023).

#### Habitat Area/Length

The area or length of each habitat was calculated using qGIS software. In calculating the area or length of each habitat, habitats which occur as two or more isolated parcels across the site were combined, where they were deemed to be of a similar composition and condition. Distinctions were made between habitats to be retained (i.e. left as found in baseline), enhanced (i.e. improved condition) or lost (i.e. destroyed by proposed development).

Areas of scattered trees were calculated using the Tree Helper tool within the Statutory Biodiversity Metric Class sizes for urban trees are set out in Table 8-1 of the Statutory Biodiversity Metric User Guide (Natural England, 2023).

#### Habitat Condition

Habitat condition was assessed using the relevant condition assessment sheets found in the Statutory Biodiversity Metric User Guide (Natural England, 2023).

#### Strategic Significance

Strategic significance was assigned for each habitat based upon a review of the following:

- Ecological value
- Function within the landscape
- Any site or habitat allocations under the Local Nature Recovery Strategy or designated site (SAC, SSSI, LNR, LWS, BOA)

### 2.2 Post Development Biodiversity Value

The post development BNG Calculation was informed by the proposed plan which is included in Appendix 1. A post development habitat plan is provided in Appendix 4.



**Habitat Classification**

Proposed habitats were translated to their equivalents in the UK Habitat Classification using The UK Habitat Classification Habitat Definitions Version 2.0 (The UK Habitat Classification Working Group, July 2023) and the information provided within the proposed plan.

**Habitat Area/Length**

The area or length of each proposed habitat was calculated using qGIS software. In calculating the area or length of each habitat, habitats which occur as two or more isolated parcels across the site were combined, where they were deemed to be of similar composition and condition. Distinctions were made between habitats to be retained (i.e. left as found in baseline), enhanced (i.e. improved condition) or newly created.

Areas of scattered trees were calculated using the Tree Helper tool within the Statutory Biodiversity Metric Class sizes for urban trees are set out in Table 8-1 of the Statutory Biodiversity Metric User Guide (Natural England, 2023).

**Habitat Condition**

Target habitat condition for each proposed habitat was determined assessed using the Temporal Multipliers Tool and the Enhancement Temporal Multipliers Tool included in the Statutory Biodiversity Metric spreadsheet as well as the relevant condition assessment sheets found in the Statutory Biodiversity Metric User Guide (Natural England, 2023). This is based on the assumption that a 30-year management plan will be adopted for the site.

**Strategic Significance**

Strategic significance was assigned for each proposed habitat based upon a review of the following:

- Likely ecological value
- Function within the landscape
- Any site or habitat allocations under the Local Nature Recovery Strategy or designated site (SAC, SSSI, LNR, LWS, BOA)

**2.3 Limitations**

The PEA was carried out when surveying vegetation is sub-optimal. Therefore, the condition assessments are based on surveys undertaken in a sub-optimal time of year. However, given the nature of the habitats present, it is not anticipated that any significant plant species were missed and therefore it is not anticipated that this will cause any significant changes to the biodiversity net gain calculations.

### 3.0 Results

#### 3.1 Baseline Habitats

Table 1 details the baseline habitats present within the site along with their area/length, condition and strategic significance.

Table 1: Baseline Biodiversity Value

Habitat	Area (Ha)/Length(km)	Description	Condition Assessment	Strategic Significance
Building	0.1216	Existing building	N/A	Area/compensation not in local strategy/ no local strategy
Developed land, sealed surface	0.8313	Existing hard-standing	N/A	Area/compensation not in local strategy/ no local strategy
Introduced Shrub	0.015852	Existing areas of introduced shrubs	N/A	Area/compensation not in local strategy/ no local strategy
Broadleaved Woodland	0.01572	Existing area of trees, species include hawthorn, blackthorn, sycamore, hazel	Moderate	Location ecologically desirable but not in local strategy
Vegetated Garden	0.0263	Vegetated garden	N/A	Area/compensation not in local strategy/ no local strategy
Urban Tree	0.0163	Area calculated with tree helper tool, based on 4 small, poor condition trees	Poor	Area/compensation not in local strategy/ no local strategy
Hedgerow	0.0806Km	Area of hedgerow comprising small leaved lime, sycamore and hazel.	Poor	Location ecologically desirable but not in local strategy

#### 3.2 Post Development Habitats

Table 2 details the post development habitats present within the site along with their area/length, condition and strategic significance. An assessment of the anticipated condition for each habitat (where relevant) is provided in Appendix 5b, which is based on the assumption that a 30 year management plan will be implemented for the site.

Table 2: Post Development Biodiversity Value (Scenario A)

Habitat	Area(Ha)/ Length(Km)	Description	Target Condition	Strategic Significance
Introduced Shrub	0.0073	RETAINED Majority of the existing areas of introduced shrubs	N/A	Area/compensation not in local strategy/ no local strategy
Broadleaved Woodland	0.01572	RETAINED Entire existing area of trees	Moderate	Location ecologically desirable but not in local strategy
Vegetated Garden	0.0263	RETAINED Majority of vegetated garden	N/A	Area/compensation not in local strategy/ no local strategy
Urban Tree	0.0081	RETAINED Two trees, area calculated with tree helper tool	Poor	Area/compensation not in local strategy/ no local strategy
Developed land sealed surface	0.5862	Proposed are of hard-standing	N/A	Area/compensation not in local strategy/ no local strategy
Building	0.36626	Proposed car park and existing building	N/A	Area/compensation not in local strategy/ no local strategy
Urban Ground level planters	0.00899	Proposed atrium area in car park, with vegetation and potted plants	N/A	Area/compensation not in local strategy/ no local strategy

### 3.3 Change in Biodiversity Value of the Site

Full details are provided in the Defra Statutory Biodiversity Metric The headline results are presented in Appendix 6.

#### Areas of Habitat

The baseline habitat value of the site is 0.29 area units, comprising 0.14 units of broadleaved woodland, 0.07 units of scattered trees, 0.03 units of introduced shrub, 0.05 units of vegetated garden and 0 units of hard-standing and building. There is a baseline of 0.16 units of linear habitat comprised of hedgerow.

The post development habitat value of the site (Proposed) is 0.26 area units, comprising 0.14 units of retained woodland, 0.01 units of retained introduced shrub, 0.05 units of retained vegetated garden, 0.04 units of retained trees, 0.02 units of ground level planters and 0 units of buildings and 0 units of hard-standing. There is a post-development habitat value of 0.07 linear units comprised of retained hedgerow.

The current proposed plan results in a **-11.31% net loss** in habitat area units and **-54.19% net loss** of linear units. Mandatory 10% biodiversity net gain is not achieved.

## 4.0 Recommendations to Deliver BNG

### 4.1 Discussion

The current proposed plan results in a **-11.31% net loss** in habitat area units and **-54.19% net loss** of linear units.

The client commits to the following scenario to achieve 10% biodiversity net gain:

Scenario B – Results in **+10.18%** net gain of linear units and **+12.44%** area habitat units

In addition to the proposed plans, which entail the creation of ground level planters and retention of woodland, vegetated garden and urban tree:

- Plant a minimum of 0.0155km (length) of species-rich native hedgerow, moderate condition, within the site or within the LPA boundary or National Character Area of impact site
- To reach moderate condition, the hedgerow must be over 1.5m height, over 1.5m wide, the gap between the ground and the base of the hedgerow should be less than 0.5m, the hedgerow will be continuous with gaps making up less than 10% of total length, no invasive non-native species, and no excessive hedgerow cutting. Species-rich hedgerow requires over five native or archaeophyte woody species.
- Plant a minimum of six small, native trees (moderate condition) within the site or within the LPA boundary or National Character Area of impact site.
- The metric calculation allows for an area of 0.02Ha of grassland (modified grassland, poor condition) to be lost in order to facilitate the planting of six small trees

Alternatively, the client may buy **0.06** area units (medium distinctiveness) and **0.11** linear units from an off-site biodiversity net gain units provider

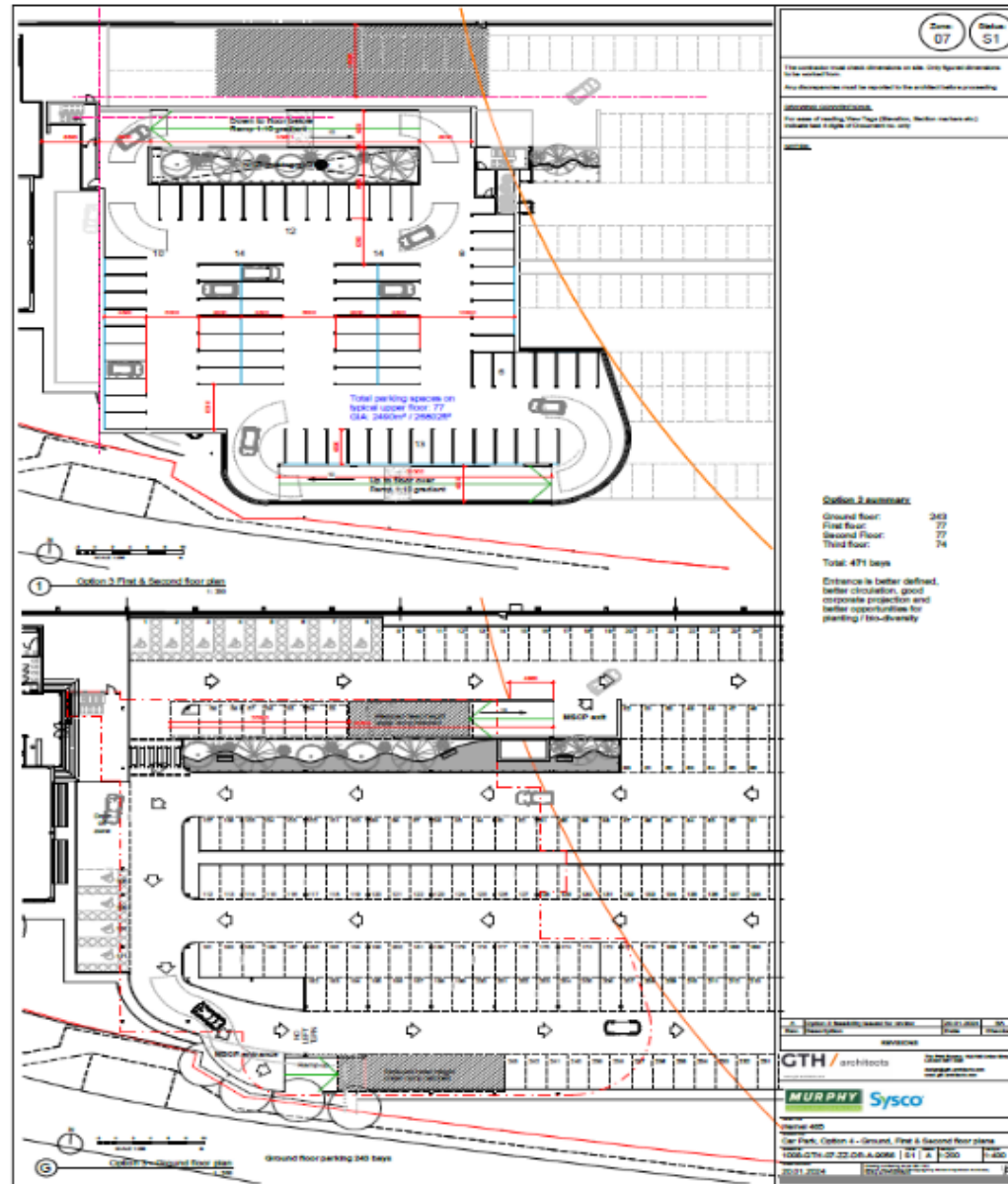
### 4.2 Post Development

A Biodiversity Net Gain (BNG) Management Plan must be produced for the site. This should include recommendations for the implementation, management and monitoring of the site for at least 30 years.

## 5.0 Bibliography

- Arbtech (2023) Preliminary Ecological Appraisal
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.
- CIEEM-CIRIA-IEMA (2019) Biodiversity Net Gain – Good Practice Principles for Development.
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- Natural England (2023). The Statutory Biodiversity Metric (JP039).
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- Natural England (2023). The Defra Biodiversity Metric 4.0 Technical Annex 1 - Condition Assessment Sheets and Methodology (JP039).
- Natural England (2023). The Defra Biodiversity Metric 4.0 Technical Annex 2 – Technical Information (JP039).
- The UK Habitat Classification Habitat Definitions Version 2.0 (The UK Habitat Classification Working Group, July 2023)

Appendix 1: Proposed Development Plan





### Appendix 2: Site Location Plan



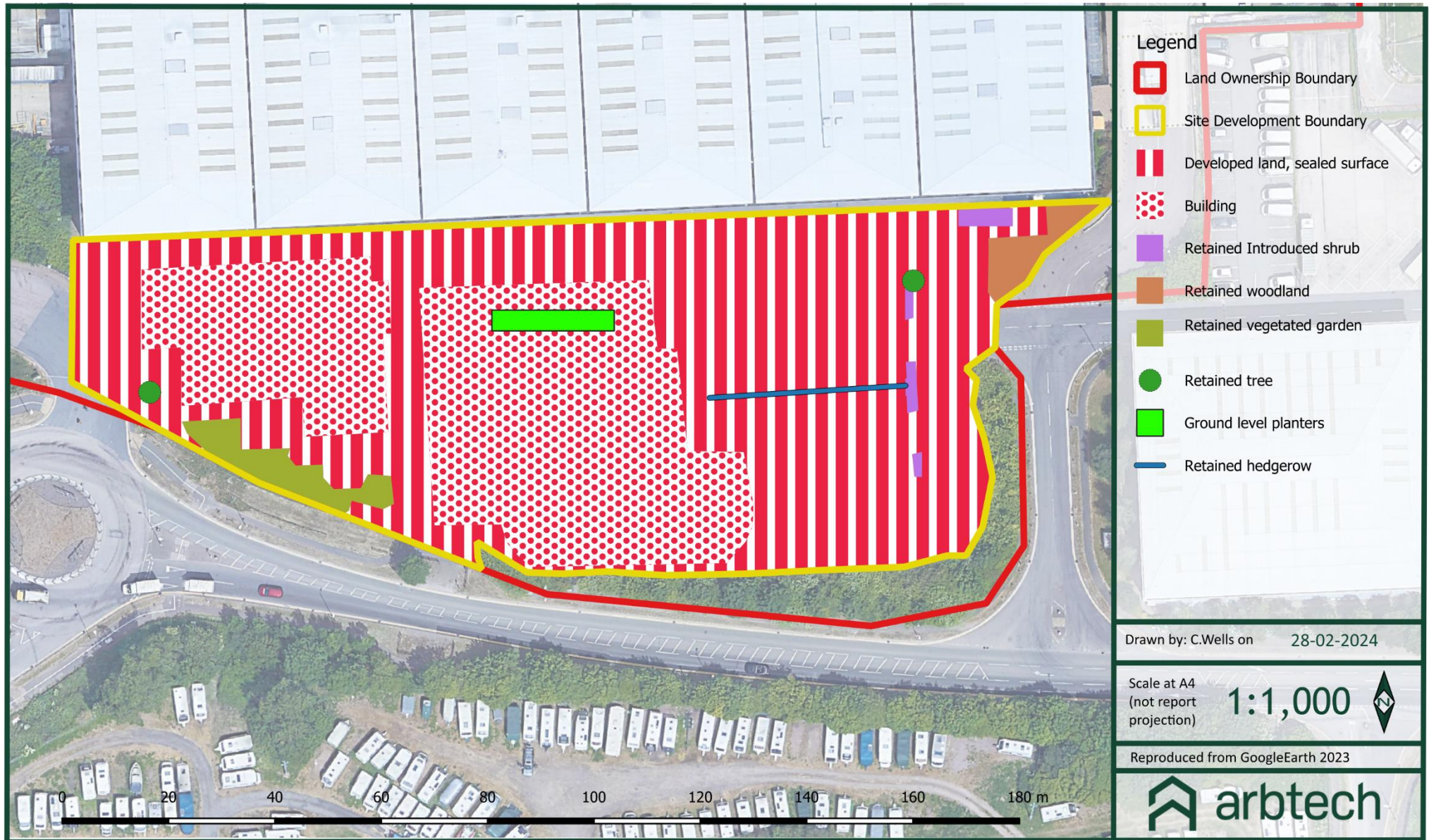


Appendix 3: Baseline Habitat Plan





### Appendix 4: Post Development Habitat Plan (Proposed)



### Appendix 5: Headline BNG Results

The Defra Statutory Biodiversity Metrics are provided as a separate excel spreadsheets.

#### Proposed plans

FINAL RESULTS		
<b>Total net unit change</b> <small>(Including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	<i>Habitat units</i>	-0.03
	<i>Hedgerow units</i>	-0.09
	<i>Watercourse units</i>	0.00
<b>Total net % change</b> <small>(Including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	<i>Habitat units</i>	-11.31%
	<i>Hedgerow units</i>	-54.19%
	<i>Watercourse units</i>	0.00%
<b>Trading rules satisfied?</b>		<b>No - Check Trading Summaries ▲</b>

#### Scenario B-

FINAL RESULTS		
<b>Total net unit change</b> <small>(Including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	<i>Habitat units</i>	0.04
	<i>Hedgerow units</i>	0.02
	<i>Watercourse units</i>	0.00
<b>Total net % change</b> <small>(Including all on-site &amp; off-site habitat retention, creation &amp; enhancement)</small>	<i>Habitat units</i>	12.44%
	<i>Hedgerow units</i>	10.18%
	<i>Watercourse units</i>	0.00%
<b>Trading rules satisfied?</b>		<b>Yes ✓</b>

**Appendix 6: Condition Assessments**

Baseline

UK Habitat Classification	Habitat Type	Criteria		Notes
Other Broadleaved Woodland	Woodland	A	2	Two age classes present, no significant browsing damage evident, no invasive species, five native tree or shrub species, 50-80% canopy are native, 10-20% woodland has temporary open space, one tree age class present, tree mortality less than 10%, no recognisable NVC community, one storey across all survey plots, one veteran tree per hectare, less than 25% deadwood, nutrient enrichment and damaged ground present over 20%.
		B	3	
		C	3	
		D	3	
		E	2	
		F	3	
		G	2	
		H	3	
		I	1	
		J	1	
		K	2	
		L	1	
		M	1	
Individual Trees; Urban	Trees	A	Y	Tree is native, not mature, regular pruning, no deadwood or ecological niches for vertebrates present, less than 20% of tree canopy area over sails vegetation beneath
		B	Y	
		C	N	
		D	N	
		E	N	
		F	N	

Proposed

UK Habitat Classification	Habitat Type	Criteria Aims		Notes
Other Broadleaved Woodland	Woodland	A	3	Three age classes present, no significant browsing damage evident, no invasive species, five native tree or shrub species, 50-80% canopy are native, 10-20% woodland has temporary open space, one tree age class present, tree mortality less than 10%, no recognisable NVC community, two stories across all survey plots, one veteran tree per hectare, 50% of survey plot has deadwood such as standing deadwood, large dead branches or stems, branch stubs and stumps or an abundance of small cavities, no nutrient enrichment or damaged ground
		B	3	
		C	3	
		D	3	
		E	2	
		F	3	
		G	2	
		H	3	
		I	1	
		J	2	
		K	2	
		L	3	
		M	3	
Hedgerow	Native Hedgerow	A1	Y	Hedgerow in moderate condition, only has three failures, including failure of both criteria in only one functional group.  Hedgerow must be over 1.5m height, the gap between the ground and the base of the hedgerow should be less than 0.5m, the hedgerow will be continuous with gaps making up less than 10% of total length, no invasive non-native species, and no excessive hedgerow cutting.
		A2	N	
		B1	Y	
		B1	Y	
		C1	N	
		C2	N	
		D1	Y	
D2	Y			

Scenario B-

UK Habitat Classification	Habitat Type	Criteria		Notes
Individual Trees; Urban	Trees	A	Y	Trees are native and not mature.
		B	Y	
		C	N	No excessive pruning, ecological niches for vertebrates present (eg ivy, loose bark, cavaties), likely that less than 20% of tree canopy area over sails vegetation beneath.
		D	Y	
		E	Y	
		F	N	Minimum of six small, moderate condition trees required.