Biodiversity Net Gain Assessment

15 Newbridge Lane, Brimington, Derbyshire, S43 1LX

Paul Martin

Arbtech Consultant's Contact Details:

Matthew Edwards BSc (Hons) TechArborA

Consultant

Tel [redacted] Email: [redacted]

Arbtech Consulting Ltd

https://arbtech.co.uk

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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 Paul Martin to undertake a Biodiversity Net Gain (BNG) Assessment at 15 Newbridge Lane, Brimington, Derbyshire, S43 1LX (hereafter referred to as “the site”). The assessment was required to inform a planning application for the erection of a residential dwelling (hereafter referred to as “the proposed development”).

The current proposed plan results in a 514.22% net gain in habitat and 100% net gain in hedgerow units. This is more than the 10% target of biodiversity net gain.

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1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Paul Martin to undertake a Biodiversity Net Gain (BNG) Assessment at 15 Newbridge Lane, Brimington, Derbyshire, S43 1LX (hereafter referred to as “the site”). The assessment was required to inform a planning application for the erection of a residential dwelling (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:

Defra Biodiversity Metric 4.0.

Preliminary Ecological Appraisal (PEA) (Arbtech Consulting Ltd, 2023).

1.2 Site Location, Geology and Landscape Context

The site is located at National Grid Reference SK 39599 73783 and has an area of approximately 270m2 comprising built-up area and garden. It is surrounded by residential dwellings with Chesterfield Canal and the River Rother located approximately 300m west. The wider landscape is comprised of two statutory designated sites (Bluebank Pools Local Nature Reserve (LNR) & Brearley Wetland LNR) situated >400 m from the site. Additionally, deciduous woodland, traditional orchards, lowland meadows, and good quality semi-improved grassland are located within 2km. 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. The Environment Act (2021) is still in a transitional phase and is not expected to become mandatory until November 2023. However, the requirement for biodiversity net gain is also enshrined within the National Planning Policy Framework (NPPF, 2021).

The DEFRA Biodiversity Metric 4.0 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 Biodiversity Metric 4.0 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 PEA (Arbtech Consulting Ltd, 2023). A baseline habitat plan is provided in Appendix 3.

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 Biodiversity Metric 4.0. Class sizes for urban trees are set out in Table 8-1 of the Biodiversity Metric 4.0 User Guide (Natural England, 2023).

Habitat Condition

Habitat condition was assessed using the relevant condition assessment sheets found in the Biodiversity Metric 4.0 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

2.2 Post Development Biodiversity Value

The post development BNG Calculation was informed by drawing No. 2023-034-001 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 drawing No. 2023-034-001.

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 Biodiversity Metric 4.0. Class sizes for urban trees are set out in Table 8-1 of the Biodiversity Metric 4.0 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 Biodiversity Metric 4.0 spreadsheet as well as the relevant condition assessment sheets found in the Biodiversity Metric 4.0 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

2.3 Limitations

None.

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. A full condition assessment for each habitat (where relevant) is provided in Appendix 5a.

Table 1: Baseline Biodiversity Value

Habitat	Area / Length	Description & Condition Assessment	Strategic Significance
G4 modified grassland	0.0123ha	The site is comprised of a garden and driveway. It is comprised of modified grassland, a tarmac drive, concrete hard surfacing from the demolition of a garage. The grass has not been recently cut resulting in a sward length of approximately 10cm. It is comprised of perennial rye grass, dandelion, and clover. 1. "There are 6-8 vascular plant species per m2 present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. **No** 2. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed. **No** 3. "Some scattered scrub (including bramble Rubus fruticosus agg.) may be present, but scrub accounts for less than 20% of total grassland area. **Yes** 4. Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities. **No** 5. Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens). **No** 6. Cover of bracken Pteridium aquilinum is less than 20%. **Yes** 7. There is an absence of invasive non-native plant species3 (as listed Schedule 9 of WCA4). **Yes** **Passes three of the criteria and therefore assigned poor condition.**	Area/compensation not in local strategy/ no local strategy.
u1b developed land – sealed surface	0.0092ha	The site is comprised of a garden and driveway. It is comprised of modified grassland, a tarmac drive, concrete hard surfacing from the demolition of a garage. Bramble is growing on the western boundary where the garage had been demolished. **No assessment required.**	Area/compensation not in local strategy/ no local strategy.

Sparsely vegetated land	0.0005ha	To the east is an area that was previously maintained as a vegetable plot. Since i abandonment it is comprised of buddleia, rosebay willowherb and poppy. 1. Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area. **No** 2. The habitat parcel contains different plant species that are benefic wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year. **No** 3. "Invasive non-native plant species (listed on Schedule 9 of WCA1) and others which are to the detriment of native wildlife (using professional judgement)2 cover less than 5% of the total vegetated area. **No** **Passes none of the criteria and therefore assigned poor condition.**	Area/compensation not in local strategy/ no 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. The proposed development will result in the loss of all habitats.

Table 2: Post Development Biodiversity Value

Habitat	Area / Length	Description and Target Condition	Strategic Significance
G4 modified grassland	0.0105ha	Newly created modified grassland. 1. "There are 6-8 vascular plant species per m2 present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. **No** 2. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed. **No** 3. "Some scattered scrub (including bramble Rubus fruticosus agg.) may be present, but scrub accounts for less than 20% of total grassland area. **No** 4. Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use	Area/compensation not in local strategy/ no local strategy.

		or storage, erosion caused by high levels of access, or any other damagi management activities. No 5. Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens). No 6. Cover of bracken Pteridium aquilinum is less than 20%. Yes 7. There is an absence of invasive non-native plant species3 (as listed Schedule 9 of WCA4). Yes **Passes two of the criteria and therefore assigned poor condition.**	
u1b developed land – sealed surface	0.0114ha	Comprised of a driveway, patio, dwelling. **No assessment required.**	Area/compensation not in local strategy/ no local strategy.
Urban tree	0.0489ha	Proposal includes the planting of 12 trees. Species selected are non-native and include Fagus sylvatica 'Dawyck', Malus tschonoskii 'Pillar Crab' and Crataegus prunifolia. 1. The tree is a native species (or at least 70% within the block are species). No 2. The tree canopy is predominantly continuous, with gaps in canopy c making up <10% of total area and no individual gap being >5 (individual trees automatically pass this criterion). Yes 3. The tree is mature (or more than 50% within the block are mature). No 4. There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height. No 5. Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark. No 6. More than 20% of the tree canopy area is oversailing vegetation beneath. Yes **Passes two of the criteria and therefore assigned poor condition.**	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 Biodiversity Metric 4.0.

Areas of Habitat

The baseline habitat value of the site is 0.03 units, comprising 0.02 units of modified grassland, 0.00 units of sparsely vegetated land and 0.00 units of developed land – sealed surface.

The post development habitat value of the site is 0.16 units, comprising modified grassland (0.02 units), developed land –sealed surface (0.00 units), and urban tree (0.14 units)

This results in a net change in biodiversity of 514.22% (i.e. a net gain).

Hedgerows

The baseline hedgerow value of the site is 0.00 units.

The post development habitat value of the site is 0.01 units, comprising the creation of 0.01 units of native hedgerow.

This results in a net change in biodiversity of 100% (i.e. a net gain).

4.0 Recommendations to Deliver BNG

4.1 Discussion

The current proposed plan results in a 514.22% net gain in habitat and 100% net gain in hedgerow units. This is more than the 10% target of biodiversity net gain.

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 to ensure that biodiversity net gain is delivered.

5.0 Bibliography

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.

Joint Nature Conservation Committee (2010). Handbook for Phase 1 habitat survey a technique for environmental audit. http://jncc.defra.gov.uk/PDF/pub10_handbookforphase1habitatsurvey.pdf

Natural England (2023). The Biodiversity Metric 4.0 (JP039).

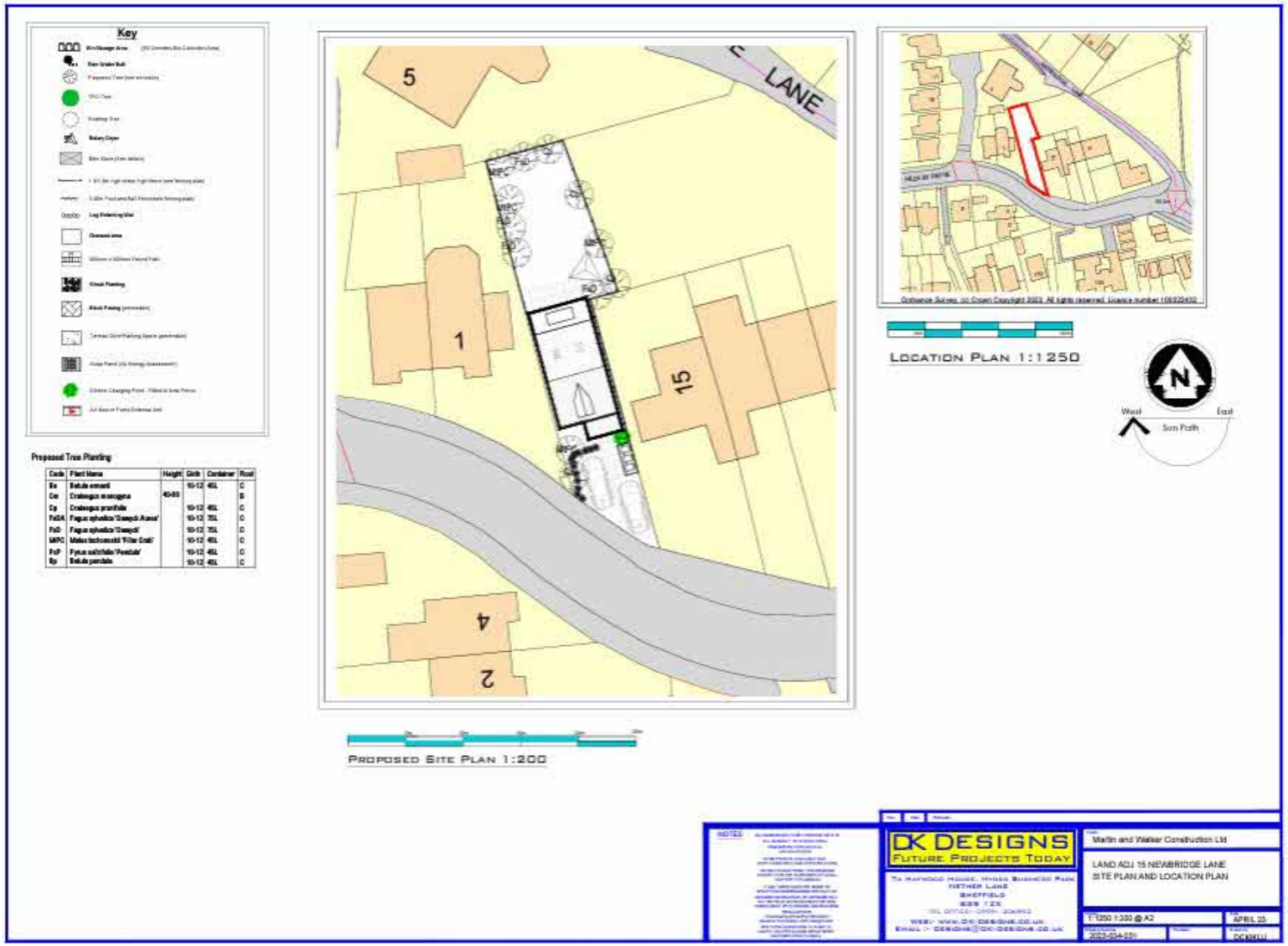
Natural England (2023). The Biodiversity Metric 4.0 User Guide (JP039).

Natural England (2023). The Biodiversity Metric 4.0 Technical Annex 1 - Condition Assessment Sheets and Methodology (JP039).

Natural England (2023). The 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