

Land off Burn Road, Birchencliffe

BIODIVERSITY GAIN PLAN

April 2024



KNIGHT SKY ECOLOGY
PRACTICAL ECOLOGY SOLUTIONS

E: info@knightskyecology.co.uk

M: 07535 457027

W: www.knightskyecology.co.uk

Report Ref: KSE_014_05

Revision: 00



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1 INTRODUCTION

1.1 Instruction and Background

Knight Sky Ecology was commissioned to provide ecological consultancy services in relation to a housing development located off Burn Road, Huddersfield, HD3 3BT. The development received outline planning permission on 9th February 2021 (Application no. 2019/60/94051/W).

Part of this commission included the provision of a Biodiversity Gain Plan (referred to as a BGP herein). The BGP forms part of a framework of biodiversity protection, enhancement, monitoring and management documents stemming from the Ecological Impact Assessment (EclA) report (Brooks Ecological, 2020) and the subsequent updated EclA report (Knight Sky Ecology, 2023).

1.2 Existing Documents

This BGP has been informed by the following documents which were submitted to the reserved matters application to set out the Biodiversity Net Gain commitments made for the site post-development:

- Knight Sky Ecology (2023). Land adjacent to Cliffe Farm, Burn Rd, Birchencliffe. Biodiversity Net Gain Report. February 2024.
- Statutory Biodiversity Metric Tool.
- Habitat Condition Assessment (for all relevant habitats).

2 ECOLOGICAL FEATURES

2.1 Habitats

Table 2.1 provides a list of all the habitats that are to be lost or retained along with the selected habitats which are to be created. There are no habitats subject to enhancement. The created habitats that are of primary consideration for management are highlighted in green. Habitats such as gardens and introduced shrubs do not require long term monitoring or management provided that they are established during the landscaping works. Figure 1 provides an overview of the baseline habitats and Figure 2 provides an overview of the locations of each habitat parcel post-development.

Table 2.1. Habitats within the site to be lost, created and managed.

Broad Habitat	Habitat Type	Area (ha)	Condition	Area retained	Biodiversity Commitments
BASELINE					
Grassland	Other neutral grassland	0.6303	Poor	0	N/A - To be lost
Grassland	Modified grassland	0.1811	Poor	0	N/A – Area adjacent to Woodlands Court to be lost
Grassland	Modified grassland	0.066	Poor	0.0469	Grassland along PRow – No management commitments required provided that the habitat is retained in perpetuity as stated.
Heathland and shrub	Bramble scrub	0.164	Condition Assessment N/A	0.0224	No management commitments required provided that the habitat is retained in perpetuity as stated.
Individual trees	Rural tree	0.0041	Moderate		N/A - To be lost
CREATED HABITATS					
Urban	Developed land; sealed surface	0.51	N/A - Other		N/A - Buildings, driveways, roads and paving
Urban	Vegetated garden	0.2057	Condition Assessment N/A		N/A - No management commitments required provided that the habitat is established as stated.
Grassland	Other neutral grassland	0.0809	Moderate (proposed)		Wildflower grasslands on roadside verges and within and around attenuation pond
Urban	Introduced shrub	0.0204	Condition Assessment N/A		N/A - No management commitments required provided that the habitat is established as stated.
Heathland and scrub	Mixed scrub	0.1544	Moderate (Proposed)		Wildlife corridor
Individual trees	Urban tree	0.1425	Moderate (Proposed)		Trees in public domain and wildlife corridor

2.2 Hedgerows

There are no existing hedgerows on the site. However, a native hedgerow and ornamental hedgerows are to be planted and form part of the BGP as detailed in Table 2.2 and shown on Figure 2.

Table 2.2. Hedgerow habitats that are to be created.

Existing hedgerow habitats				Biodiversity commitments
Hedge number	Hedgerow type	Length (km)	Condition	
CREATED HABITATS				
N/A	Native hedgerow	0.198	Moderate (proposed)	Hedgerow along south boundary
N/A	Non-native and ornamental hedgerow	0.166	Poor (automatically assigned)	Hedging around several gardens

3 MANAGEMENT

3.1 Aims and Objectives

The primary aim of this BGP is to provide a framework for the delivery of landscaping establishment and management measures within the site in order to meet the **ON-SITE** biodiversity net gain (BNG) metric calculations stated within the statutory biodiversity metric and the BNG report (Knight Sky Ecology, 2023). The development is to deliver **4.04 habitat units and 0.91 hedgerow units**.

This biodiversity unit delivery will be achieved by creating and managing the habitats in line with the stated specifications and as outlined in Sections 2.1 and 2.2.

Please note, there is to be a biodiversity net loss of 1.14 habitat units (-28.34%). The developer will be submitting additional detail to show how the development will achieve biodiversity net gain via an off-site biodiversity unit provider. This is to include the submission of a biodiversity gain site register reference number once this has been agreed and prior to the commencement of any development works.

3.1 Ecological Trends and Constraints

There are no ecological trends or constraints within the site that may influence management. The trees would not be actively managed and there are no expected ecological constraints to the management of the grasslands.

3.2 Management Prescriptions

3.2.1 General

The appointed landscaping contractor is to adhere to general good practice guidelines for any landscaping operations including:

- *BS 4428:1989 code of practice for general landscape operations*
- *BS 8545:2014 Trees: from nursery to independence in the landscape. Recommendations*

3.2.2 Other Neutral Grassland – Creation

Creation and Establishment

Wildflower grassland (other neutral grassland) is to be created on the roadside verges and within and around attenuation pond. It is not envisaged that there are to be any issues within the soil type, shade cover, nutrient levels, texture, organic matter content or pH within these locations.

The seed mix chosen is to comprise:

- Verges and around attenuation pond
EM3 Special General-Purpose Meadow Mixture - 20% native wild flowers and 80% slow growing grasses (Available from Emorsgate Seeds <https://wildseed.co.uk/>) including an appropriate quantity of yellow rattle (*Rhinanthus minor*) which will aid the suppressing of competitive grasses (Available from Emorsgate Seeds <https://wildseed.co.uk/>).
- Attenuation pond:
 - EP1 Pond Edge Mixture (if main body of pond is estimated to be inundated permanently); or,
 - EM8 Meadow Mixture for Wetlands (if periodic inundation is expected only).

Ground Preparation

The existing grassland is to be completely stripped using the appropriate machinery. The subsoil should be repeatedly cultivated using a disc harrow or rotovator, to 30mm depth then further cultivated and rolled to produce a firm seed bed.

Sowing

The suggested sowing rates for the wildflower grassland seed mixes is 40kg/ha (4g/m²). Seed is best sown in the autumn or spring. The seed must be surface sown and can be applied by a machine. Thereafter, the seed should be firmed in with a roll to give good soil / seed contact.

Yellow rattle can be sown at a rate of between 0.1g and 1g per m². Yellow rattle is best sown in autumn.

First Year Management

Most of the meadow species are perennial and are slow to establish. They will not usually flower in their first growing season. Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings, are great for bugs, and they will die before the year is out. So resist cutting the annual weeds until mid to late summer, especially if the mixture contains yellow rattle. The sward should be cut in August-September and all arisings removed. This will reveal the young meadow, which can then be kept short by mowing through to the end of March of the following year. Residual perennial weeds such as docks, thistles and nettles should be carefully dug out (herbicide is not to be used).

Management Once Established (Years 2-5)

In the second and subsequent years, the grassland should be managed around a main summer cut. After flowering in late July or August, the grassland should be mown once to 50mm with the arisings left in situ for 1-7 days to allow seeds to shed, then removed from site. Any regrowth can be cut in late autumn / winter to 50mm and again in spring if needed. Perennial weeds such as nettles, thistles and docks should be removed by digging out only (herbicide is not to be used).

The species mix used (including yellow rattle) is expected result in at least 20% of the sward being less than 7cm and at least 20% more than 7cm.

3.2.3 Individual Trees

Trees to be planted should include species such as English oak, rowan, silver birch and wild cherry. Ornamental variants must be avoided, as these would be a lower value resource to native faunal species.

Imported topsoil and site soils shall be to British Standards BS 3882 - Multipurpose Grade. Spread to 300mm depth over areas to be planted with trees. Remaining minimum rooting depth to be provide by a good quality subsoil to BS 8601:2013, free of building material debris to achieve a rooting depth of 900mm.

All trees to have clear stems to 1.8m above ground level with well-developed branching heads with a single, central leader and healthy, fibrous root systems.

Trees shall be root balled or container grown and planted into pits of an appropriate size to accommodate the root system without restriction, backfilled with a 3:1 topsoil: compost mix and shall

be secured to a machine rounded stake using 1 no. tree tie with rubber spacer. Finished height of stake shall not exceed 1/3 height of staked tree above ground.

The trees within the development will be checked on a yearly basis and any dead / dying trees will be replaced.

3.2.4 Mixed Scrub – Creation

Scrubby trees to be planted should include species such as hawthorn, holly, dog-rose, blackthorn, willow, European gorse, hazel and guelder rose.

Native species shall be planted into 450mm depth, good quality clean topsoil incorporating organic compost and slow-release fertiliser, over un-compacted sub-grade. Prior to planting all bareroot plant stock shall be dipped into a suitable mycorrhizal plant dip in accordance with the manufacturer's recommendations. Plants shall be planted in groups of 3-11 of a single species with the taller growing species to the back of the areas of the areas and the lower growing species to the edges of the areas. Planted areas to be mulched after planting with coarse grade forest mulch to a uniform depth of 50mm.

3.2.5 Hedgerows – Creation

The native hedgerow should contain at least one UK native species such as beech, yew, dogwood, field maple and crab apple. No specification provided for ornamental hedgerows.

Hedge to be planted in a previously prepared trench, 500mm wide and 450mm deep backfilled with a 3:1 mix of multipurpose topsoil to BS3882:2007 and planting compost. Bareroot transplants to be dipped in a suitable mycorrhizal dip before planting. Plants to be planted in a double staggered row, 300-350mm wide, at 5nr. plants per linear metre with species planted randomly throughout in groups of 7 to 30 of a single species. The hedge lines shall be mulched after planting with forest mulch to a uniform depth of 50mm.

3.2.6 Habitat Condition Requirements & Targets

Other Neutral Grassland

Table 3.1 provides a list of the habitat condition criteria for each habitat parcel. In order to meet the stated moderate target condition, the grassland would need to **pass 3-5 of the 6 specified criteria including essential criterion A.**

Individual Trees

As per Table 3.1, in order to meet the stated moderate target condition, the trees would need to **pass 3-4 of the 5 specified criteria.**

Mixed scrub

As per Table 3.1, in order to meet the stated moderate target condition, the line of trees would need to **pass 3-4 of the 5 specified criteria.**

Table 3.1. Criteria for target conditions (habitats)

Condition Required	Condition Assessment Criteria	
Other Neutral Grassland		
Moderate	A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present.
	B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm) creating microclimates which provide opportunities vertebrates and invertebrates to live and breed.
	C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens.
	D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.
	E	Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.
	F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (excluding certain species referenced in the habitat condition spreadsheet).
Scrub		
Moderate	A	The parcel represents a good example of its habitat type - the appearance and composition of the vegetation closely matches its UKHab description (where in its natural range). - At least 80% of scrub is native, - There are at least three native woody species, - No single species comprises more than 75% of the cover (except hazel <i>Corylus avellana</i> , common juniper <i>Juniperus communis</i> , sea buckthorn <i>Hippophae rhamnoides</i> (only in its restricted native range), or box <i>Buxus sempervirens</i> , which can be up to 100% cover).
	B	Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present.
	C	There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA ⁵) and species indicative of suboptimal condition make up less than 5% of ground cover.
	D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.
	E	There are clearings, glades or rides present within the scrub, providing sheltered edges.
Individual Trees		
	A	The tree is a native species (or at least 70% within the block are native species).
	B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).
	C	The tree is mature (or more than 50% within the block are mature)

Condition Required	Condition Assessment Criteria	
	D	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.
	E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.
	F	More than 20% of the tree canopy area is oversailing vegetation beneath.

3.2.7 Hedgerow Condition Targets and Requirements

Native Hedgerow

As per Table 3.2, in order to meet the stated moderate target condition, the hedgerow would need to have no more than 4 failures in total; and should not fail both attributes in more than one functional group.

Table 3.2. Criteria for target conditions (hedgerows)

Condition Required	Attributes and Functional Group		Criteria description	Condition Assessment Criteria
Other Neutral Grassland				
Moderate	A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of the shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is >1.5 m height).
	A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (such as blackthorn <i>Prunus spinosa</i> suckers) are only included in the width estimate when they are >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice).
	B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length	This is the vertical 'gappiness' of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).

Condition Required	Attributes and Functional Group		Criteria description	Condition Assessment Criteria
	B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length; and No canopy gaps >5 m	This is the horizontal 'gappiness' of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall 'gappiness' but are not subject to the >5 m criterion (as this is the typical size of a gate).
	C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: · Measured from outer edge of hedgerow; and · Is present on one side of the hedgerow (at least).	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedgerow. Undisturbed ground is present for at least 90% of the hedgerow length, greater than 1 m in width and must be present along at least one side of the hedgerow. This criterion recognises the value of the hedgerow base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.
	C2.	Nutrient-enriched perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	The indicator species used are nettles <i>Urtica</i> spp., cleavers <i>Galium aparine</i> and docks <i>Rumex</i> spp. Their presence, either singly or together, does not exceed the 20% cover threshold.

3.3 Work Programme

Table 3.3 provides a timetable for the habitat enhancement, creation and management actions for the site during Years 1 to 5.

Table 3.3. Timetable for annual management requirements

Habitat	Enhancement or creation	Management Action	Year	Timings	Management Requirements	Time to Target Condition
Other Neutral Grassland	Created grassland only	Sowing	1	Spring or autumn ideal	See Section 3.3.3.	5 yrs – Created grassland 10 yrs – Enhanced grassland
	All enhanced and created grasslands	Mowing	1	Mid to late August and as required in winter until March.	See Section 3.3.3.	
	All enhanced and created grasslands	Mowing	2 -5	Mid to late August after establishment	See Section 3.3.3.	
	All enhanced and created grasslands	Weed control (if required)	2-5	June-July	See Section 3.3.3.	
Individual trees, mixed scrub & hedgerows	All planted trees	Tree planting	1	October – February	See Section 3.3.4	27 yrs (trees) yrs (mixed scrub)
		Replacement planting (if required)	2-5	October – February as required	See Section 3.3.4	5 years (native hedgerow)

4 ROLES & RESPONSIBILITIES

4.1 Funding Mechanism & Responsibilities

Marsden Contracting (the site owners) are responsible for the delivery of all BNG requirements detailed within this document and for complying with each biodiversity related planning condition detailed within the consent notice. All habitats will be secured and maintained for at least 30 years in line with legislation.

Marsden Contracting will appoint a landscaping contractor who will follow the stated habitat establishment and management measures within this document. This will include the implementation of remedial actions should the habitats not meet the required conditions.

Due to the habitat types, it is not envisaged that intensive habitat management actions are required for the habitats after the 5-year establishment period. For example, the grassland will only be needed to be cut once a year and the trees / scrub should not require any works (unless dead or diseased).

4.2 Ecological Clerk of Works

An Ecological Clerk of Works (ECoW) from Knight Sky Ecology or other ecological consultancy is to be appointed prior to the commencement of any construction works and will oversee all biodiversity related aspects of the scheme throughout the duration of the landscaping and habitat establishment schedule (Years 1-5).

5 MONITORING & REPORTING

5.1 Biodiversity Monitoring Report

The ECoW is to complete biodiversity monitoring and reporting plan in line with the required BNG commitments. This monitoring will be undertaken to confirm the value of biodiversity units present and as based on a survey at an appropriate time of year (e.g., June/July). This data will be used to compare to the BNG calculations and targets set out (Knight Sky Ecology, 2023).

A monitoring report is to be completed by the ECoW in Year 1 (after implementation) and Years 2-5. The monitoring report will feature the following information:

- An overview of each habitats current condition and whether the habitat is achieving or failing its target condition.
- Confirmation of required actions for the next 12-month period including a schedule of remedial actions to be undertaken where required.
- Timing of actions.

The monitoring and management report be reviewed and updated every 5 years and be implemented for a minimum of 30 years.

5.2 Remedial Actions & Contingencies

The monitoring reports are to detail any requirements for remedial actions in the event that biodiversity aims are not being met (i.e., target conditions are not being achieved). Remedial actions may include (but not be limited to) reseeded of bare ground areas (if not establishing), removal and replacement of dead trees, further pernicious weed control, changes to the cutting regime or further seeding of yellow rattle.



APPENDIX A. FIGURES

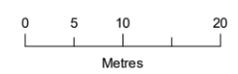
Figure 1. UK Habitat Classification Map (Baseline)

Figure 2. UK Habitat Classification Map (Post-development)



Survey Information	
	Site boundary (10,413.5m ²)
UKHab Habitat Survey	
	g3c - Other neutral grassland (6,302.8m ²)
	g4 - Modified grassland (2,470.5m ²)
	h3d - Bramble scrub (1,640.2m ²)
	114 - Dry stone wall (292.5m)
	200 - Tree (1)

Secondary Codes:
 16 - Tall forbs
 103 - Horse grazed



PROJECT TITLE
LAND ADJACENT TO CLIFFE FARM, BURN ROAD, BIRCHENCLIFFE

DRAWING TITLE
Figure 1. UK Habitat Classification Map (Baseline)

VER	DATE	REMARKS	Drawn	Checked
1.3	18/12/23	UKHab	MP	RK

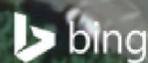
DRAWING NUMBER:
 KSEcology/CliffeFarm/UKHab

SCALE	1:725	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG
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418850
418800
418750
418700

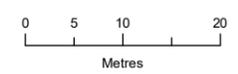
412000 412050 412100 412150

412000 412050 412100 412150





Survey Information	
	Site boundary (10,413.5m ²)
UKHab Habitat Survey	
	g3c - Other neutral grassland (608.2m ²)
	g3c - Other neutral grassland, attenuation pond (113.6m ²)
	g4 - Modified grassland (469.2m ²)
	h3d - Bramble scrub (224.5m ²)
	h3h - Mixed scrub (460.8m ²)
	h3h - Mixed scrub, with trees (1,083.4m ²)
	u1b - Developed land; sealed surface (3,391.2m ²)
	u1b5 - Buildings (1,713.8m ²)
	16 - Tall forbs (87.2m ²)
	828 - Vegetated garden (2,057.4m ²)
	847 - Introduced shrub (204.2m ²)
	h2a6 - Other native hedgerow (198.6m)
	h2b - Non-native and ornamental hedgerow (116.6m)
	114 - Dry stone wall (238.0m)
	Extra heavy standard tree (3)
	Heavy standard tree (13)
	Standard tree (8)



PROJECT TITLE
LAND ADJACENT TO CLIFFE FARM, BURN ROAD, BIRCHENCLIFFE

DRAWING TITLE
Figure 2. UK Habitat Classification Map (Post-Development)

VER	DATE	REMARKS	Drawn	Checked
1.1	09/02/24	Proposed	MP	RK

DRAWING NUMBER:
 KSEcology/CliffeFarm/Proposed

SCALE	1:725	PLOT SIZE	A3	DATUM	OSGB	PROJECTION	BNG
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