Biodiversity Net Gain Feasibility Assessment & Outline Habitat Management and Monitoring Plan (HMMP)

Land at South of Smugglers Lane

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

1.1 The Ecology Partnership was commissioned by Miller Homes to undertake a Biodiversity Net Gain (BNG) feasibility assessment for the proposed development of the land south of Smugglers' Lane, Slaughterford Farm, Itchingfield, Barns Green, Horsham, West Sussex, RH13 0PS, hereafter referred to as the 'site' (Figure 1).

1.2 The site comprises one field of modified grassland bordered by hedgerows on each aspect. A thin strip of Ancient woodland borders the western boundary, with a large fishing pond beyond. The site is approximately 3.2ha and located southwest of the town of Barns Green in Horsham, at a central grid reference TQ1246727020. In the wider area supports a fishery and campsite to the south and west, residential development to the east and blocks of woodland connected by arable land and hedgerows.

1.3 The proposals are for a residential development with associated access road and garden space. Amenity areas include a play area and open space supporting a SuDS basin. Additional tree planting will be present across the site. A 20m vegetated buffer is to be maintained along the boundary of the adjacent ancient woodland to the west of the site.

Figure 1: Site assessment boundary (red line).

2.0 Statutory Biodiversity Metric

2.1 BNG principles are aimed to support both the aspired green infrastructural proposals set to define the created landscape and support biodiversity and habitat enhancement. BNG principles are set within the Environment Bill (2021).

2.2 In order to determine the on-site habitat baseline, habitats were mapped and subject to a condition assessment on 16th April 2025 following the standard metric guidelines. This work was undertaken by Principal ecologist Matt Pendry BSc (Hons) MCIEEM (FISC 4) and assistant ecologist Hayley Gale BSc (Hons).

2.3 The Statutory Biodiversity Metric is used to calculate biodiversity losses and gains for terrestrial habitats within the application area. This metric underpins the Environment Bill's provisions for mandatory biodiversity net-gain in England.

2.4 The Statutory Biodiversity Metric uses habitat as a proxy for wider biodiversity with different habitat types scoring different values according to their relative biodiversity value and dependent on the condition and location of the habitat, to calculate 'biodiversity units'.

On-Site Habitat Baseline

2.5 The habitats currently present on site have been identified and assessed. The onsite habitats comprised mainly cattle and sheep grazed modified grassland in poor condition. The modified grassland was short sward and supported low species richness with an average of 3.6 species recorded over 5 quadrats across the site. This grassland was bound species rich native hedgerows with trees to the north and south a native hedgerow to the east and the edge of an offsite ancient woodland to the west. Dry ditches were also present along the southern and western boundaries and it is understood there is a culvert under the eastern boundary. These habitats are shown in Figure 2 below and in Tables 1, 2,& 3 overleaf.

2.6 A full condition assessment is presented in Appendix 1.

Table 1. ***On-site habitat breakdown – Pre-Development***

Habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Total habitat units	Area units retained	Units lost	User comments
Modified Grassland	3.424	Low	Poor	Low	6.85	0	6.85	Modified grassland which is in poor condition. It is cattle grazed and is of short sward.
Developed land; sealed surface	0.151	V.Low	N/A - Other	Low	0	0	0	Road to east of site
Rural tree	0.0163	Medium	Good	Low	0.2	0	0.2	T15 medium ash tree with dieback in north hedge
Total area	**3.42**	**Total Units/Area**			**7.04**	**0**	**7.04**	

Table 2. ***On-site linear habitat breakdown – Pre-Development***

Linear Habitat	Length (km)	Distinctiveness	Condition	Strategic significance	Total hedgerow units	Units retained	Units lost	User comments
Species-rich native hedgerow with trees - associated with bank or ditch	0.204	V.High	Good	Low	4.90	4.90	0	Southern hedgerow
Species-rich native hedgerow with trees	0.221	High	Good	Low	3.98	3.98	0	Northern hedgerow
Native hedgerow	0.116	Low	Good	Low	0.7		0.7	Eastern hedgerow
Total length	**0.54**	**Total Units/Area**			**9.57**	**8.87**	**0.7**	

Table 3. ***On-site watercourse habitat breakdown – Pre-Development***

Watercourse type	Length (km)	Distinctiveness	Condition	Strategic significance	Watercourse encroachment	Riparian encroachment	Total watercourse units	Length Enhanced	Units lost	User comments
Culvert	0.122	Low	Poor	Low	n/a	n/a	0.17	0.101	0.03	Culvert under road

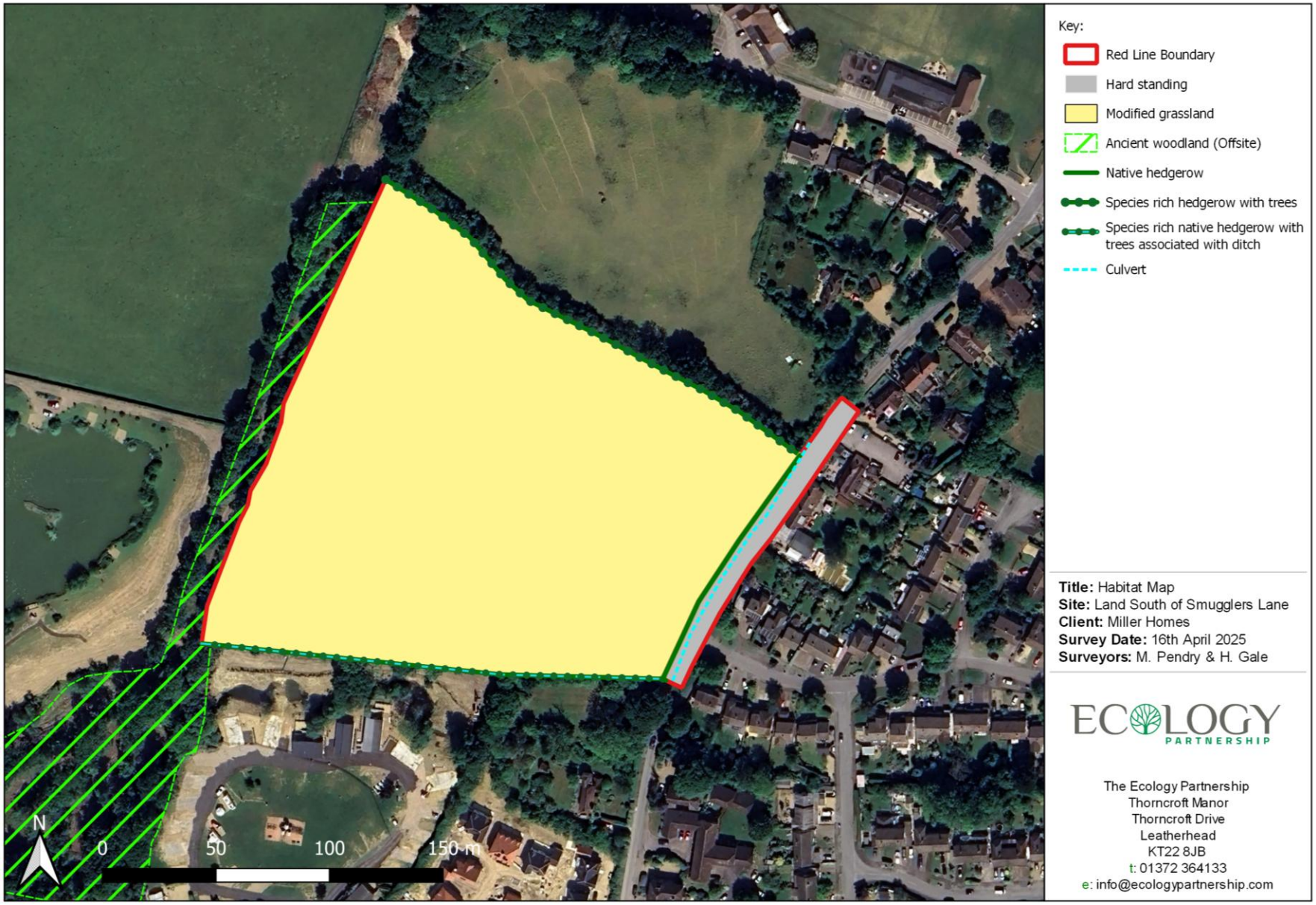

Figure 2: On-Site Habitat Baseline

On-Site Habitat Creation

2.7 The proposed development is for a housing development with associated vegetated gardens and road access. A 20m natural buffer from the ancient woodland will comprise mixed scrub, flower rich other neutral grassland in moderate condition, providing an ecotone from the mature boundary trees to the flower-rich grassland. This area will be fenced off with a post and rail fence and a new species-rich hedgerow, creating a secluded wildlife area protected from recreational pressure. A SuDS basin be located in the south of the site and will be seeded with a flower-rich wet-grassland mix. The greenspace around the SUDS will also be seeded with flow rich grassland. Secluded areas of natural space along the southern and northern boundaries will be planted with mixed native shrub planting with a small gap for maintenance access. A total of 56 native trees will also be planted outside of the residential areas and will be maintained to achieve moderate condition. A further 31 street trees will be planted on verges outside of private gardens in the residential area. The native hedgerow along the eastern site boundary will be removed to allow access onto the site. To compensate for this, as well as the new species-rich native hedgerow in the west of the site, another will be established along the frontage of the development in the east of the site, further back from the main road. All other boundary habitats onsite are to be retained as part of the development. The proposed habitat areas are detailed in Figure 3 and Tables 4 and 5 overleaf.

Figure 4: Proposed habitats

Table 4. ***On-site habitat breakdown – Post-Development Creation***

Habitat	Area (hectares)	Distinctiveness	Condition	Strategic significance	Years to target condition	Difficulty	Total Habitat units	User comments
Developed Land; sealed surface	1.367	V.Low	N/A-Other	Low	0	Low	0.00	Residential development and access roads
Modified Grassland	0.012	Low	Poor	Low	1	Low	0.02	LAP
Mixed Scrub	0.38	Medium	Moderate	Low	5	Low	2.54	Mixed native shrub planting along northern-southern and western boundaries
Other neutral grassland	0.437	Medium	Moderate	Low	5	Low	2.93	Wildflower grassland areas
Other neutral grassland	0.101	Medium	Moderate	Low	5	Low	0.68	Sustainable drainage system in the south of the site seeded with wildflower seed-mix
Artificial unvegetated, unsealed surface	0.006	V.Low	N/A-Other	Low	0	Low	0.00	Pedestrian footpaths
Vegetated Garden	0.709	Low	N/A	Low	1	Low	1.37	vegetated gardens associated with housing
Other neutral grassland	0.415	Medium	Poor	Low	2	Low	1.55	Flowering lawn areas
Urban Tree	0.228	Medium	Moderate	Low	27	Low	0.70	56 native trees
Urban Tree	0.118	Medium	Poor	Low	10	Low	0.33	29 street trees
Total area (excluding trees)	3.43	Total Units/Area					9.77	

Table 5. ***On-site linear habitat breakdown – Post-Development Creation***

Linear Habitat	Length (km)	Distinctiveness	Condition	Strategic significance	Years to target condition	Difficulty	Total Habitat units	User comments
Species Rich Native hedgerow	0.353	Medium	Good	Low	12	Low	2.76	New hedgerow along frontage and ancient woodland buffer

Table 6. ***On-site linear habitat breakdown – Post-Development Creation***

Habitat	Length (km)	Distinctiveness	Condition	Strategic significance	Years to target condition	Difficulty	Extent of encroachment		Total units	Comments
							Watercourse	Riparian		
Other rivers and streams	0.101	High	Poor	Low	10	Medium	None	Major/ None	0.34	Existing culvert to be closed and water redirected through new meandering channel within the site.
Culvert	0.031	Low	Poor	Low	1	Low	n/a	n/a	0.03	Culverted sections of diverted watercourse

Table 7: Final results

FINAL RESULTS		
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	2.73
	Hedgerow units	2.07
	Watercourse units	0.20
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	38.77%
	Hedgerow units	21.59%
	Watercourse units	121.74%
Trading rules satisfied?	Yes ✓	

2.8 The final results are shown in table 5 above.

2.9 The calculations confirm that the development results in a **+38.77%** net gain in area habitat units, a **+21.59%** net gain in linear habitat units, and **+121.74%** net gain in watercourse units.

2.10 All the trading rules have been satisfied.

2.11 It should be noted that detailed landscaping will be developed as part of approval conditions. As such, this assessment would need to be revised once landscaping has been finalised.

3.0 Outline Habitat Management & Monitoring Plan (HMMP)

3.1 A full HMMP will be developed at the detailed design stage to detail the long-term management of the proposed habitats to achieve the targeted habitat conditions, over a 30 year timespan. An outline version of this HMMP is presented below to aid in the determination of this application.

Roles and responsibilities

3.2 The roles and responsibilities will be confirmed at a later date once planning is approved.

Land use summary

3.3 The grassland is currently managed through cattle grazing throughout the year.

3.4 The proposed site will be mainly used for residential purposes, with open greenspace scattered onsite and around the perimeters, but with a greater emphasis on biodiversity. Grassland areas will be wildflower-rich and will be managed through mowing, with different frequency and mow heights for amenity areas within the residential extent of the site and for the biodiversity areas within the ancient woodland buffer, along the boundaries and within and around the SUDS basin. Individual trees will be planted both within the main body of the residential area and more open areas of greenspace and will be managed for health, aesthetics and amenity value, whilst mixed scrub and species rich native hedgerow planting along the boundaries will be managed for biodiversity, with less frequent management.

Baseline Environmental Information

3.5 Detailed baseline environmental for the site is presented in the accompanying PEA and comprises cattle-grazed modified grassland in poor condition bound by species-rich hedgerows with trees to the north and south, ancient woodland to the west and species-poor native hedgerow to the east.

Summary of planned management activities

3.6 The overall aim for the management of the site is to protect and maintain the ecological value of retained native hedgerows and ensure that newly created habitats successfully establish and achieve their target condition within a set timeframe. It will also ensure that specific wildlife features, such as bird and bat boxes remain functional throughout the 30 year timeframe of the HMMP.

Habitats and condition targets

3.7 Table 8 overleaf presents a summary of what will be delivered based on the biodiversity metric. These habitat condition targets form the basis of what the management plan is setting out to achieve throughout a period of 30 years. The specific management to achieve these targets is detailed for each habitat on Tables 9 to 15, with a collated table of management prescriptions on Table 16. It should be noted that this excludes habitats with a 0 value such as buildings and roads, as well as habitat within private ownership such as vegetated gardens.

Table 8. Habitat and condition targets summary

Target Habitat Type	Targeted Condition	Years to Targeted Condition	Condition Assessment Targets	Comments
Modified grassland	Poor	1	Passes for criteria C, E, F and G desirable.	This habitat is located within the LAP and so will be impacted by recreation, and is unfeasible to achieve higher than poor condition.
Other neutral grassland	Moderate	5	Passes for criteria A, B, D minimum (**A is essential to reach moderate condition**) Passes for criteria C, E and F desirable	New areas of native wildflower grassland to be seeded in the west and south-east of the site
	Poor	2	Passes for criteria D & E desirable	Flowering lawn on the verges and open space areas
Other Neutral Grassland (SUDS)	Moderate	5	Passes for criteria A, C, D minimum (**A is essential to reach good condition**)	SUDS basin seeded with EM8 meadow mixture for wetlands, with 19 species of wildflowers.
Species Rich Native Hedgerow	Good	12	Passes for criteria for groups A, C, D, E, G, H minimum and B & F desirable	Areas of new and existing native hedges around the perimeters of the development, bordering the other neutral grassland.
Mixed scrub	Moderate	4	Passes for criteria A, C, & D minimum	Areas of new native shrub planting along the north-southern and western boundaries.
Rural tree	Poor	10	Passes for criteria D & F desirable	29 small trees to be planted within the street scene. As only poor condition targeted, management will focus on the health and longevity of the tree as opposed to specific condition criteria.
	Moderate	27	Passes for criteria A, D and F	56 small native trees to be planted outside of the core development area.
Other rivers & streams	Poor	10	n/a	De-culverted watercourse to be allowed to vegetate naturally, and be kept free of undesirable species

Table 9. Management and condition targets – Other neutral grassland (not SUDS)

Modified grassland (LAP) Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	No	n/a	n/a
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 for insects, birds and small mammals to live and breed.	No	n/a	n/a
C	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes not essential	n/a	If bare ground exceeds 5% in October, these areas will be scarified and seeded with additional grass seed.
D	Cover of bracken *Pteridium aquilinum* less than 20% and cover of scrub (including bramble) less than 5%.	Yes not essential	n/a	The grass will be cut to *c.*30mm on a twice monthly basis between March and October
E	Combined cover of species indicative of suboptimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging activities) accounts for less than 5% of total area. If any invasive non-native species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes but not essential	n/a	The above management will help supress certain undesirable species.
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type.	No	n/a	n/a

Table 10. Management and condition targets – Other neutral grassland (wildflower grassland)

Other neutral grassland (wildflower grassland) Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Yes	Scarify the ground and seed with EM4 seedmix at 4g/m$^{2.}$	For the following three years cut monthly to *c.*50mm and collect and remove cuttings in Aug-Oct. With additional cuts in April/May in years 2/3. On all subsequent years the sward will be cut to *c.*50mm once a month in April, and September.
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 for insects, birds and small mammals to live and breed.	Yes	n/a	In addition to the above management, at least 20% of the total grassland area will be left unmown, targeted along the edges of the species rich native hedgerows/scrub surrounding the grassland. This will help provide a buffer of overwintering habitat for invertebrates and reptiles, with only a single cut in August to control any excessive scrub encroachment.
C	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes but not essential	n/a	After the August cut, the ground will be scarified to ensure between 1 and 5% of the area comprises bare ground, allowing opportunities for seeds to make contact with the ground and increase chance of new wildflowers establishing.
D	Cover of bracken *Pteridium aquilinum* less than 20% and cover of scrub (including bramble) less than 5%.	Yes	n/a	The management described for A&B will ensure bracken and scrub remain below these thresholds.
E	Combined cover of species indicative of suboptimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging activities) accounts for less than 5% of total area. If any invasive non-native species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes but not essential	n/a	The above management will help supress certain undesirable species.
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type.	Yes but not essential	The proposed seed mix, includes at least 28 different species.	The above management will help maintain species-richness., although it may not be possible for all areas to maintain above a species richness of 10 species/m^2.

Table 11. Management and condition targets – Other neutral grassland (Flowering lawn)

Other neutral grassland (Flowering lawn) Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	No	Scarify the ground and seed with EL1 seedmix at 4g/m$^{2.}$	n/a
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 for insects, birds and small mammals to live and breed.	Yes	n/a	n/a
C	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes but not essential	n/a	If bare ground exceeds 5% in October, these areas will be scarified and seeded with additional EL1 grass seed.
D	Cover of bracken *Pteridium aquilinum* less than 20% and cover of scrub (including bramble) less than 5%.	Yes	n/a	The grass will be cut to *c.*30-40 mm on a twice monthly basis between March and May and between September and October. During June to August it should be cut only if grass growth (not flowers) exceeds 100mm
E	Combined cover of species indicative of suboptimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging activities) accounts for less than 5% of total area. If any invasive non-native species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes but not essential	n/a	The above management will help supress certain undesirable species.
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type.	No	n/a	n/a

Table 12. Management and condition targets – Other neutral grassland (SUDS)

Other neutral grassland (SUDS) Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. **Note – this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.**	Yes	Seed SUDS basin with EM8 meadow mixture for wetlands seedmix at 4g/m$^{2.}$ and gently roll the area.	Starting the following August cut to *c.*50mm and collect and remove cuttings, where possible. Repeat this process in September and October. On all subsequent years the sward will be cut to *c.*50mm once in March, and again in September, with cutting removed where feasible. .
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 for insects, birds and small mammals to live and breed.	No	n/a	n/a
C	Cover of bare ground between 1% and 5%, including localised areas, for example, rabbit warrens.	Yes	n/a	After each September cut, the bottom of the SUDS basin will be scraped/scarified to ensure between 1 and 5% of the basin comprises bare ground.
D	Cover of bracken *Pteridium aquilinum* less than 20% and cover of scrub (including bramble) less than 5%.	Yes	n/a	The management described for A will ensure bracken and scrub remain below these thresholds.
E	Combined cover of species indicative of suboptimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging activities) accounts for less than 5% of total area. If any invasive non-native species (as listed on Schedule 9 of WCA) are present, this criterion is automatically failed.	Yes but not essential	n/a	The above management will help supress certain undesirable species.
F	There are 10 or more vascular plant species per m^2 present, including forbs that are characteristic of the habitat type.	Yes but not essential	The proposed seed mix, includes at least 19 different wildflower species.	The above management will help maintain species-richness, although it may not be possible to maintain above a species richness of 10 species/m^2.

Table 13. Management and condition targets – Native hedgerows

Native hedgerows Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A1	**Height:** >1.5m average along length.	Yes	Hedges will be planted as whips 0.8-1m in height, and protected by tree guards.	Once established the hedgerows will be trimmed to a height of no lower than 2m in the winter period.
A2	**Width:** >1.5m average along length.	Yes not essential	Whips will be planted in two offset parallel lines at least 1m apart	Once established the hedgerows will be trimmed to a width of no thinner than 2m in the winter period.
B1	**Gap – hedge base:** Gap between ground and base of canopy <0.5m for >90% of length.	Yes	n/a	If a gap of at the base of the hedge develops to an extent which causes this condition to fail, the hedgerow will be subject to a hedge laying process by a sufficiently experienced contractor.
B2	**Gap – hedgerow canopy continuity:** Gaps make up <10% of total length; and no canopy gaps >5m.	Yes	Whips will be planted at 1m intervals to ensure a continuous and dense hedge can develop	If gaps form in the hedge due to failed shrubs, these will be removed and new whips planted, and protected with tree guards.
C1	**Undisturbed ground and perennial vegetation:** >1m 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 hedge (at least)	Yes	Hedgerows planted within areas of neutral grassland	n/a
C2	**Nutrient-enriched perennial vegetation:** Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	No	n/a	n/a
D1	**Invasive and neophyte species:** >90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA) and recently introduced species.	Yes	Prior to planting the planting area will be inspected for invasive species. If any are identified, a specialist contractor will be employed to safely kill or legally dispose of it	Visual inspection annually during mid-summer. If any are identified, a specialist contractor will be employed to safely kill or legally dispose of it
D2	**Current damage**: >90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	Yes	n/a	Areas of hedgerow that become significantly damaged will be removed (if necessary) and replanted.

Table 14. Management and condition targets – Mixed scrub

Mixed scrub Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
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 comprising more than 75% of the cover (except hazel *Corylus avellana*, common juniper *Juniperus communis*, sea buckthorn *Hippophae rhamnoides* or box *Buxus sempervirens*, which can be up to 100% cover).	Yes	Scrub planting will incorporate seven different native species, planted at 1m intervals to allow foraging.	Until establishment scrub will be watered as required to ensure success.
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran) shrubs are all present.	No	n/a	n/a
C	There is an absence of invasive non-native species (as listed on Schedule 9 of WCA) and species indicative of suboptimal condition make up less than 5% of ground cover.	Yes	Prior to planting the area will be stripped of existing turf and a mulch applied around the whips to supress weed growth.	Undesirable species will be controlled as required to ensure they do not exceed 5% of ground cover. Herbicides should be avoided as a treatment however.
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	Yes	n/a	The management for other neutral grassland along the edge of the scrub will ensure this criteria is passed.
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	No	n/a	n/a

Table 15. Management and condition targets – Urban trees

Urban trees Condition Assessment Criteria		Targeted	Creation/ enhancement Approach	Management Approach
A	The tree is a native species (or more than 70% within the block are native species).	Yes	Trees planted outside of the core development area will comprise native species	n/a
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).	Yes	n/a	n/a
C	The tree is mature (or more than 50% within the block are mature).	No	n/a	n/a
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.	Yes	Handling, planting and establishment of trees shall be in accordance with BS 8545:2014.	Management of trees shall be in accordance with BS 3998:2010.
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	No	n/a	n/a
F	More than 20% of the tree canopy area is oversailing vegetation beneath.	Yes	Trees planted outside of the core development.	n/a

Table 16. Management prescriptions and timings

Habitat	Management action/prescription	Timing
Modified grassland	Scarify the ground and seed with grass seed and gently roll the area.	September/October ***First year only***
	Cut grassland to *c.*30mm and collect and remove cuttings.	***Twice a month***
	If bare ground exceeds 5% in October, these areas will be scarified and seeded with additional grass seed.	October
Other neutral grassland (Wildflower grassland)	Scarify the ground and seed with EM4 seedmix at 4g/m^2 and gently roll the area.	September/October ***First year only***
	Cut grassland to *c.*50mm and collect and remove cuttings, leaving at least 20% uncut adjacent to hedgerows and scrub for majority of the year and central areas uncut when scrub boundary does need to be cut.	***First year:*** Once a month: Aug-Oct ***Years 2/3 years:*** Once a month: March-May, Aug-Oct ***Subsequent years:*** Once in April, and September ***Scrub/hedge margins:*** Once in August
	After each September cut, the ground will be scarified to ensure between 1 and 5% of the area comprises bare ground.	September
Other neutral grassland (Flowering lawn)	Scarify the ground and seed with EL1 seedmix at 4g/m^2 and gently roll the area.	September/October ***First year only***
	Cut grassland to *c.*30-40mm and collect and remove cuttings, leaving area adjacent to hedgerows and scrub for majority of the year.	***March to May:*** Twice a month ***June to August:*** Only when grass growth exceeds *c.*100mm ***Sep to Oct:*** Twice a month ***Scrub/hedge margins:*** Once in August

Other neutral grassland (SUDS)	Seed SUDS basin with EM8 seedmix at 4g/m$^{2.}$ and gently roll the area.	First September after creation only
	Cut to a height of *c.*50mm and collect and remove cuttings, where possible	Second year: Monthly August, September, October Subsequent years: Monthly March and September
	After each September cut, the bottom of the SUDS basin will be scraped to ensure between 1 and 5% of the basin comprises bare ground.	September
Native hedgerows	Plant whips in double staggered rows at 1m intervals	First autumn only
	Trim 1/3 of established hedgerows to a height and width of at least 2m	Once annually Nov-Feb, with a different hedge section each year.
	If a gap of at the base of the hedge develops to an extent which causes this condition to fail, the hedgerow will be subject to a hedge laying process by a sufficiently experienced contractor.	Only if required: Nov-Feb
	If gaps form in the hedge due to failed shrubs, these will be removed and new whips planted, and protected with tree guards.	Only if required: Autumn or spring
	Visual inspection for invasive non-native species. If any are identified, a specialist contractor will be employed to safely kill or legally dispose of it	Annually summer months
Mixed Scrub	Prior to planting the area will be stripped of existing turf and a mulch applied. Whips planted at 1m intervals	First spring or autumn only
	For the large areas of scrub, every 10 years 30% of the scrub area will be coppiced to ground level	Every 10 years: Nov-Feb
	Control undesirable species to ensure they make up less than 5% of ground cover.	As required
Urban trees	Plant heavy and extra-heavy standards and apply mulch to bases	First spring or autumn only

All trees and shrub	**Water to saturation of ground at base of shrub/tree**	**Weekly June-August in first three years, and as required outside of this (e.g. weekly in times of drought)**
	Monitor health of trees/shrub and replace where necessary	Annually: summer months
Stream	Cut back any bramble scrub encroaching the channel	October
All habitats	Identify and remove litter	Monthly
Bird boxes	Clean out old nests and other material from bird boxes with stiff brush, to remove potential parasites.	Annually Sep-Feb
Bird and bat boxes	Confirm they are still attached and in good condition. If broken, they should be replaced by a comparable model. An ecologist should be consulted prior to removal of bat boxes.	Annually Oct to Feb

Habitats retention

3.8 The retained hedgerows along the north and south boundary and offsite ancient woodland bordering the western boundary, have been protected through the design of the scheme, avoiding root protection areas where possible and using protective measures. This will be detailed in a Construction Environmental Management Plan (CEMP).

Monitoring

3.9 Full detail of the monitoring on site will be detailed in the full and final version of the HMMP. The general proposal for monitoring is for annual assessments of each habitat on site in the first five years and then a single visit every five years thereafter. All trees will be monitored by an arboriculturist and all other habitats will be monitored by an ecologist.

4.0 Conclusion

4.1 The baseline value of the site is **7.04 area units, 9.57 hedgerow units, and 0.17 watercourse units.**

4.2 Post-development the proposed value of the site would be **10.11 area units**, **11.64 hedgerow units,** and **0.37 watercourse units.** This is equating to net-gain of **+43.54%**, **21.59%,** and **121.74%** respectively.

4.3 This assessment will need to be re-calculated once the detailed landscape design is finalised post planning and final results detailed in a Habitat Gain Plan.

4.4 An outline Habitat Management and Maintenance Plan (HMMP) has been prepared to detail the necessary management required to achieve the targeted net gain, over a 30-year timespan. This will be finalised to fulfil the necessary condition post planning approval.

4.5 It should be noted the biodiversity units calculated for the site post-development do not take into consideration enhancement features which could be added such as log piles, bird nesting boxes, bat boxes. All of these could be incorporated into the scheme, adding additional gains to biodiversity, albeit not measurable.

Appendix 1: Habitat Condition Assessments

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)		
UKHab Habitat Type(s): Grassland - Modified grassland		
Condition Assessment Criteria		**Grassland 1**
A	There are 6-8 vascular plant species per m 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.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m~ (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	**Fail** *(3.6 average)*
B	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.	**Fail** *Uniform sward*
C	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present). Note – patches of scrub with continuous (more than 90% cover should be classified as the relevant scrub habitat type.	**Pass**
D	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.	**Fail** *Cattle poaching*
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].	**Pass**
F	Cover of bracken *Pteridium aquilinum* is less than 20%.	**Pass**
G	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).	**Pass**
	Condition	**Poor**

Condition Assessment Result	
Good	Passes 6 or 7 of 7 criteria including essential criterion A
Moderate	Passes 4 or 5 of 7 criteria including passing essential criterion A
Poor	Passes 3 or fewer criteria; OR 4-6 of criteria but failing criterion A

Footnote 1 – Creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, common nettle *Urtica dioica*, creeping buttercup *Ranunculus repens*, greater plantain *Plantago major*, white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris*.
Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.
Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying the buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.
Footnote 4 – Wildlife and Countryside Act 1981 (as amended)

Condition Assessment Criteria	Criteria achieved?		
Hedgerows	**H1 (north)**	**H2 (east)**	**H3 (south)**
Height >1.5 m average along length	Pass	Pass	Pass
Width >1.5 m average along length	Pass	Pass	Pass
Gap – hedge base Gap between ground and base of canopy <0.5 m for >90% of length	Pass	Pass	Pass
Gap – hedge canopy continuity Gaps make up <10% of total length and No canopy gaps >5 m	Pass	Pass	Pass
Undisturbed perennial vegetation >1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length (on one side of the hedge (at least))	Pass	Pass	Pass
Undesirable species Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground.	Pass	Pass	Pass
Invasive species >90% of the hedgerow and undisturbed ground is free of invasive non-native plant species (including those listed on Schedule 9 of WCA[3]) and recently introduced species.	Pass	Pass	Pass
Current Damage >90% of the hedgerow or undisturbed ground is free of damage caused by human activities.	Pass	Pass	Pass
Tree Age (if hedgerow with trees) There is more than one age-class (or morphology) of tree present (for example: young, mature, veteran and or ancient), and there is on average at least one mature, ancient or veteran tree present per 20 - 50m of hedgerow.	Fail	N/A	Pass
Tree health (if hedgerow with trees) At least 95% of hedgerow trees are in a healthy condition (excluding veteran features valuable for wildlife). There is little or no evidence of an adverse impact on tree health by damage from livestock or wild animals, pests or diseases, or human activity.	Pass	N/A	Pass
Criteria failed	**1**	**0**	**0**
Condition (G = good; M = moderate; P = poor)	**Good**	**Good**	**Good**

Condition Assessment Result		
	Hedgerow without trees	**Hedgerow with trees**
Good	No more than 2 failures in total; AND No more than 1 in any functional group.	No more than 2 failures in total; AND No more than 1 failure in any functional group.
Moderate	No more than 4 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & C2 = Moderate condition).	No more than 5 failures in total; AND Does not fail both attributes in more than one functional group (e.g. fails attributes A1, A2, B1, C2 & E1 = Moderate condition).
Poor	Fails a total of more than 4 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).	Fails a total of more than 5 attributes; OR Fails both attributes in more than one functional group (e.g. fails attributes A1, A2, B1 & B2 = Poor condition).

Footnote 1 – DEFRA (2007) *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK.* [online] Available on:
layout (hedgelink.org.uk)

Footnote 2 – STALEY, J.T. ET AL. (2020) *Definition of Favourable Conservation Status for Hedgerows.* [online] Available on:
Definition of Favourable Conservation Status for Hedgerows - RP2943 (naturalengland.org.uk)

Footnote 3 – Wildlife and Countryside Act 1981 (as amended).

Footnote 4 – CHEFFINGS, C. M. et al. (2005) *The Vascular Plant Red Data List for Great Britain.* Species Status 7: 1-116. [online] Available on:
The Vascular Plant Red Data List for Great Britain (Species Status No. 7) | JNCC Resource Hub

Footnote 5 – BOTANICAL SOCIETY OF BRITAIN AND IRELAND (BSBI). *Definitions: wild, native or alien?* [online] Available on:
Definitions: wild, native or alien? – Botanical Society of Britain & Ireland (bsbi.org)

Footnote 6 – BSBI and Biological Records Centre (BRC) (2022) *Online Atlas of the British and Irish Flora.* [online] Available on:
Acknowledgements | Online Atlas of the British and Irish Flora (brc.ac.uk)

Footnote 7 – GB NON-NATIVE SPECIES SECRETARIAT (GBNNSS) (2022) Available on:
Home » NNSS (nonnativespecies.org)

Footnote 8 – See gov.uk standing advice on ancient and veteran trees. Available from:
Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk)
and Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)

Individual trees		
UKHab Habitat Type(s): Urban tree: Covers the following topographical formations most commonly found in urban areas[1]: **Individual Trees (urban or rural):** Young trees over 75mm in diameter at breast height whose canopies are not touching. **Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only):** Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies must overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.		
Condition Assessment Criteria		**T15**
A	The tree is a native species (or at least 70% within the block are native species).	Pass
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).	Pass
C	The tree is mature (or more than 50% within the block are mature)[1].	Fail
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.	Pass.
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	Pass
F	More than 20% of the tree canopy area is oversailing vegetation beneath.	Pass
	Condition	**Good**
Condition Assessment Result		
Good	Passes 5 or 6 criteria	
Moderate	Passes 3 or 4 criteria	
Poor	Passes 2 or fewer criteria	
Footnote 1 - See gov.uk standing advice on ancient and veteran trees. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and: Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk) **Footnote 2** - Enhancement of this habitat type is only possible by improving the habitat so that it meets all Criteria B, D and F. It is not possible or appropriate to enhance individual tree/s through meeting just one or two of those Criteria, nor by meeting Criteria A, C or E.		

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