

**Low Copelaw – A167 Junction
Improvement Scheme**
Biodiversity Net Gain Report

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1 Summary

- 1.1 BSG Ecology was commissioned by Durham County Council to produce an updated biodiversity gain assessment of a proposed road junction improvement scheme in Newton Aycliffe, County Durham.
- 1.2 The proposed junction (the 'Site') is situated on the east side of Newton Aycliffe where the B6443 meets the A167. The habitats within the Site comprise hard standing, semi-improved neutral grassland, amenity grassland, mixed plantation woodland, bramble scrub, hawthorn scrub, tall ruderal vegetation, scattered trees, and two hedgerows.
- 1.3 The habitats were input into the DEFRA Biodiversity Metric 3.1 to determine the baseline biodiversity score for the Site. The score for an indicative post-development scenario was then calculated, based on the updated draft landscape design (dated 03 January 2023 – Figure 3, Appendix 1), with a view to maximising the potential biodiversity score via on-site habitat creation.
- 1.4 For area habitats, the calculation indicates that a net loss of 4.55 biodiversity units from the baseline score of 11.04 will occur (i.e., a loss of 41.18 %). An additional 4.66 BU are required to provide a 1 % net gain.
- 1.5 For linear habitats (i.e., hedgerows), the calculation indicates a net gain of 2.31 BU (i.e., a gain of 169.60 %).
- 1.6 Based on the indicative calculation, and following the mitigation hierarchy, it is recommended that off-site compensation measures are incorporated into the scheme. Where possible, habitats provided off-site should follow the habitat trading rules imposed by the Metric, and should therefore involve the creation of mixed woodland and neutral grassland, and the planting of trees.
- 1.7 In order to demonstrate a biodiversity net gain, a further biodiversity calculation update will be required once details of the off-site habitat creation are available.

2 Introduction

Background to commission

- 2.1 In order to secure Housing Infrastructure Fund funding for junction improvement works on the A167 at Newton Aycliffe, Durham County Council (DCC) need to submit a planning application for validation by Christmas 2022.
- 2.2 The junction improvements are to supplement (but are separate from) a proposed residential development on adjacent land to the east, known as the Low Copelaw development.
- 2.3 BSG Ecology has previously undertaken ecological survey work and assessment of the proposed residential development site. The boundary of the proposed junction improvement (the 'Site', as shown on Figure 1) partially overlaps the boundary of the proposed residential development.
- 2.4 This report was commissioned in January 2023 by Durham County Council (DCC) to provide an update to the indicative biodiversity net gain assessment submitted to the Client on 23 December 2022. As landscaping information was limited at the time, the initial submission provided a baseline for the Site and suggestions to maximise the post-development score.
- 2.5 This updated document outlines the baseline biodiversity score for the Site using the DEFRA Biodiversity Metric 3.1 (Panks et al. 2022) and a post-development score, based on design and landscape information available at the time of writing (Figure 3, Appendix 1 – Landscape Strategy Proposed Access provided by Southern Green).

Site description

- 2.6 The 'Site' is situated at central ordnance survey grid reference NZ 28852 25394. It comprises land to the west of the A167 junction with the B6443, the junction itself, and land to the east of the A167, including Cedar Drive. The Site also includes a length of the A167 to the north and south.
- 2.7 Land to the west of the A167 comprises a road verge (amenity grassland), hard standing (including pavement and road surface), small amounts of dense scrub, and woodland. Land to the east of the A167 is predominantly made up of broadleaved woodland, with areas of semi-improved neutral grassland and amenity grassland, scattered trees, dense scrub, and tall ruderal vegetation are also present. Overall, the Site covers 1.95 ha.

Description of project

- 2.8 Durham County Council propose to improve the junction between the A167, the B6443, and Cedar Drive. Cedar Drive leads to Thornbeck College and the North East Centre for Autism at Aycliffe School. Land beyond this to the east, north, and south, is agricultural and is proposed to be developed for residential purposes. The Site boundary partially overlaps with the boundary for the proposed residential development.
- 2.9 The junction improvement scheme includes opening up sight lines, lengthening a filter lane on the northbound side of the A167, widening of the B6443 / A167 junction, and the creation of a new access road off the east side of the A167 directly opposite the B6443 / A167 junction (Figure 3, Appendix 1).
- 2.10 Construction work for the junction improvements will involve earthworks, embankment creation and drainage improvement. Whilst the detailed design is yet to be finalised, and there are no landscaping details available at the time of writing, it is anticipated that sustainable urban drainage system (SUDS) features will be included as part of the drainage scheme.

Purpose of report

- 2.11 The Environment Act gained Royal Assent in 2021. Under this, biodiversity gain assessments will become mandatory for most developments following a two-year implementation period, which is expected to finish in November 2023. Until then, County Durham stipulate that development

proposals are expected to enhance biodiversity, and that the use of a biodiversity calculator may be an appropriate tool to demonstrate this (Durham County Council, 2020). The Local Plan was adopted in 2020 and contains objectives and policies regarding biodiversity.

- 2.12 Objective 9 of County Durham Local Plan (2020) relates to the natural environment, with the objective being to: *“Protect, enhance, maintain and manage the county’s locally, nationally and internationally important natural environment, including through securing net gains, protecting connectivity and recognising the wider benefits from natural capital”*.
- 2.13 Paragraph 174 of the National Planning Policy Framework states that *“Planning policies and decisions should contribute to and enhance the natural and local environment by...minimising impacts on and providing net gains for biodiversity”*. Biodiversity calculation is a means of demonstrating such net gains.
- 2.14 The purpose of this report is to provide an indicative assessment of biodiversity gain for the proposed development to support the validation of a planning application to Durham County Council, using Defra’s Biodiversity Metric 3.1. The scope of the report is restricted to an indicative design stage report at this stage, as a formal design and landscaping details are yet to be developed.
- 2.15 This document reports the baseline biodiversity of the Site (in biodiversity units, BU) for both area-based and linear habitats. It also makes recommendations (for instance, for incorporation into the landscape plan) to maximise the biodiversity gain for the development and to allow the development to adhere, as far as possible, to the habitat trading rules within Biodiversity Metric 3.1.
- 2.16 These rules ensure that habitats of higher distinctiveness are not traded down for habitats of lower distinctiveness. For example, removing an area of high distinctiveness semi-natural woodland and mitigating this by providing a more extensive area of low distinctiveness conifer plantation would not satisfy the trading rules, even if the mitigation planting provided a higher BU contribution.
- 2.17 Within these rules, habitats may be replaced by:
- habitat of the same distinctiveness or better, but a different type (for low distinctiveness habitats)
 - habitats of the same broad type (for medium distinctiveness habitats)
 - the same habitat (for high distinctiveness habitats)
- 2.18 In cases where “very high distinctiveness” or irreplaceable habitats are to be lost, bespoke mitigation measures will be required.

3 Methods

3.1 The biodiversity gain assessment was completed as follows.

Stage 1 – Field survey

Extended Phase 1 habitat survey

3.2 This report is informed by two extended Phase 1 habitat surveys, which were undertaken based on industry standard guidance (JNCC, 2016). The first was completed by BSG Ecology in September 2022 to support the residential development to the east of the Site. The second was completed in December 2022 and covered areas of the Site not covered in the former survey.

3.3 Habitats were ascribed in the field using the Phase 1 habitat categories and definitions (JNCC, 2016) and converted into habitat categories in the UK Habitat Classification System ('UKHab') using the descriptions of Butcher et al. (2020) and the translation table in the Biodiversity Metric 3.1. Habitat parcels were digitised using QGIS.

3.4 Further information about these surveys is presented in a separate Preliminary Ecological Appraisal report (BSG Ecology, 2022).

Habitat condition assessments

3.5 Following the identification of habitats in the field, the condition of each habitat parcel was assessed using Natural England guidance (Panks *et al.*, 2022). The appropriate habitat condition assessment sheet for each habitat was chosen based on the habitat data gathered in the field. The condition of each baseline habitat parcel is justified (with reference to the guidance) in the following section of this report.

Stage 2 – Baseline inputs

3.6 Areas of discrete habitat parcels and lengths of linear features such as hedgerows were obtained using measurement tools within QGIS. This information was then entered into the DEFRA Biodiversity Metric 3.1 calculation tool (Panks et al., 2022) to generate the baseline biodiversity unit (BU) score for the Site. The following factors are taken into account when generating the baseline:

- *Distinctiveness*: the habitat type is scored based on a combination of its value to wildlife and conservation status (given as 'very high', 'high', 'moderate', 'low', or 'very low').
- *Condition*: assessed by scoring habitat parcels against a list of pre-determined criteria to determine whether the habitat is a good example of its type (using the categories 'poor', 'moderate', and 'good'). A condition assessment is not appropriate for all habitats.
- *Extent*: area (hectares) or length (metres) of habitat.
- *Strategic significance*: whether habitat is within a preferred location for local biodiversity and/or environmental objectives e.g., an area identified in local biodiversity action plans, or local planning policy documents.

Stage 3 – Post-development scenario

3.7 The post-development scenario entered was based on the second iteration of the landscape plan provided by Southern Green (Figure 3, Appendix 1). The landscape plan provides an overview of the proposed habitats in general terms only, but does provide a species list for each habitat type. These habitats were translated to those used in the Biodiversity Metric 3.1 based on these species list and professional judgement of the author. Further information on this is presented in section four of this report.

Limitations

- 3.8 The latest extended Phase 1 habitat survey was undertaken in December 2022, which is outside the main optimal period for this type of Survey (JNCC, 2016). However the habitats to the west of the main road were clearly identified by the surveyor as amenity grassland, mixed plantation woodland, and dense hawthorn scrub. The surveyor was confident that sufficient botanical information was collected to identify the habitats and assess their condition accurately. The timing of the survey is therefore not considered to be a significant limitation to this assessment.
- 3.9 To assess the condition of grassland habitats west of the A167, five 1x1 m quadrat samples were taken. The quadrats were sampled from the two largest parcels of this grassland. As all of these parcels were identified as being the same habitat type (i.e., amenity grassland or modified grassland) and appear to be uniform in their management (evidenced by uniform sward height across all parcels) structure and flora, this was considered to be suitably representative. Given this lack of variation, the condition for this habitat was assessed as a whole, rather than for individual parcels. This is not considered to be a significant limitation to this assessment.
- 3.10 Land to the east of the A167 was surveyed in September 2022 by BSG Ecology to inform an assessment for a different development. This approach was agreed with Durham County Council and is not considered to be a limitation.
- 3.11 Off-site habitat creation or enhancement is considered to be necessary for the development to achieve a biodiversity net gain. No off-site land has yet been identified for this, and therefore it could not be considered in any detail in this assessment. However, general recommendations for appropriate off-site habitat types and target conditions are given in the *Recommendations* section of this report, taking account of the applicable habitat trading rules.
- 3.12 In this update report, habitat areas and BU scores have been revised to account for a change in the layout. To that end, a parcel of modified grassland (known as habitat parcel 14 in the previous report) and several trees to the south of Cedar Drive previously marked as within the Site boundary are no longer within the Site boundary and will be retained.

Personnel

- 3.13 The extended Phase 1 habitat survey undertaken in September 2022 was completed by Lizzie Walker of Cheviot Ecology. Lizzie has worked as a professional ecologist since 2015, during which time she has completed various botanical surveys and assessments at a range of sites. Lizzie holds a MSc in Environmental Management. Between 2016 and 2019 she was Assistant Ecology Officer at Scottish Borders Council.
- 3.14 The extended Phase 1 habitat survey undertaken in December 2022 was completed by Senior Ecologist Josh Havlin MSc ACIEEM and Principal Ecologist Claire Dewson MCIEEM of BSG Ecology.
- 3.15 Josh has over six years of experience as an ecological consultant and has completed ecological assessments, including biodiversity gain assessments, for developments across the north east of England. Josh has experience in protected species ornithological and habitat surveys and is a competent botanist.
- 3.16 Claire has over twenty years of professional ecology and conservation experience in the consultancy and local authority sectors, specialising in protected species issues, ecological impact assessment, biodiversity net gain and land management. She has undertaken ecological assessments on many different sites.
- 3.17 This report was prepared by Josh Havlin MSc ACIEEM. Tom Flynn DPhil MSc MCIEEM CEcol, Principal Ecologist at BSG Ecology, technically reviewed this report. Tom has worked in ecological consultancy for more than 15 years and has carried out a wide range of habitat surveys, ecological assessments, and biodiversity net gain calculations.
- 3.18 Further details of current BSG Ecology staff are available at: <https://www.bsg-ecology.com/people/>

4 Calculator inputs

Baseline habitats

- 4.1 The results of the Phase 1 habitat survey are summarised in Figure 1 (Phase 1 habitat types) and Figure 2 (UKHab habitat types) in Appendix 1, and are described in the separate Preliminary Ecological Appraisal report (BSG Ecology, 2022).
- 4.2 Details of the condition assessments undertaken for habitats within the Site are presented in Appendix 2.

Baseline calculator inputs

- 4.3 Baseline habitat types and extents are presented in Figure 2 are set out in Tables 2 and 3.
- 4.4 In accordance with the guidance for Biodiversity Metric 3.1, the strategic significance of each habitat type was specified in the calculation. Woodland, tree, and hedgerow habitats were assigned the “*Formally identified in local strategy*” category. This is because woodland, trees and hedgerows are specifically identified within Policy 40 of the County Durham Local Plan, which was adopted in 2020.

Table 2 (overleaf): Summary of area-based habitats

Habitat Type ¹	Parcel Reference ²	Area (ha)	Condition	Condition assessment Rationale	Strategic Significance	BU Score
Other woodland; mixed	1	0.43	Moderate	Scores 29 points under the condition assessment	Formally identified in local strategy	3.96
Other woodland; mixed	2	0.07	Moderate			0.64
Other woodland; mixed	3	0.06	Moderate			Scores 23 points under the condition assessment
Other neutral grassland	4	0.14	Good	No more than 5% bare ground cover, closely matches UKHab definition, no invasive species or bracken, and more than 9 species per m ² present.	No local strategy	1.68
Hawthorn scrub	5	0.019	Poor	Dominated by single species and has a defined edge which does not grade into other habitats. Habitat structure is uniform. No glades present.	No local strategy	0.08
Ruderal/Ephemeral	6	0.005	Poor	Dominated by a single species and has a uniform structure.	No local strategy	0.01
Developed land; sealed surface	7	0.003	N/A - Other	Small building – no condition assessment necessary	No local strategy	0.00
Modified grassland	8	0.017	Good	Passes 6 of 7 criteria. Only failed criteria relates to sward height, which was greater than 7 cm for much of the habitat parcel	No local strategy	0.10
Developed land; sealed surface	9	0.78	N/A - Other	No condition assessment necessary	No local strategy	0.00
Introduced shrub	10	0.002	Condition Assessment N/A	No condition assessment necessary	No local strategy	0.00
Bramble scrub	11	0.038	Condition Assessment N/A	No condition assessment necessary	No local strategy	0.15
Modified grassland	12	0.017	Good	Passes 6 of 7 criteria. Only failed criteria relates to sward height, which was less than 7 cm	No local strategy	0.10
Modified grassland	13	0.023	Good		No local strategy	0.14
Modified grassland	15	0.071	Good		No local strategy	0.43

¹ Habitat type presented in UKHab0.34² Parcels numbered in accordance with 0.26 Figure 2, Appendix 1.

Modified grassland	16	0.008	Good	across entirety of habitat.	No local strategy	0.05
Modified grassland	17	0.003	Good		No local strategy	0.02
Modified grassland	18	0.007	Good		No local strategy	0.04
Modified grassland	19	0.00056	Good		No local strategy	0.34
Modified grassland	20	0.043	Good		No local strategy	0.26
Introduced shrub	21	0.002	Condition Assessment N/A	No condition assessment necessary	No local strategy	0.00
Ruderal/Ephemeral	22	0.007	Poor	Dominated by a single species and has a uniform structure.	No local strategy	0.01
Ruderal/Ephemeral	23	0.005	Poor		No local strategy	0.01
Modified grassland	24	0.096	Good	Passes 6 of 7 criteria. Only failed criteria relates to sward height, which was less than 7 cm across entirety of habitat.	No local strategy	0.58
Modified grassland	25	0.007	Good		No local strategy	0.04
Modified grassland	26	0.003	Good		No local strategy	0.02
Modified grassland	27	0.006	Good		No local strategy	0.04
Urban Tree	28	0.085	Moderate	Majority of trees are not mature or veteran; evidence of pruning, including removal of limbs	Formally identified in local strategy	0.78
Urban Tree	29	0.110	Moderate	Trees are mature with microhabitats and are native. Predominantly over-sail vegetation.	Formally identified in local strategy	1.01
Total		2.11 ha			Total	11.04

Table 3: Summary of linear habitats

Habitat Type	Hedgerow Reference	Length (m)	Condition	Rationale for Condition Assessment	Strategic Significance	BU Score
Native species rich hedgerow	H1	147	Moderate	Hedge appears to be excessively managed and is less than 1.5 m wide along length. More than 10 % of ground along its length appears to be disturbed.	Formally identified in local strategy	0.35
Hedge – ornamental non-native	H2	6	Poor	Condition is poor due to dominance of non-native species	Formally identified in local strategy	0.01
Total		153 m			Total	0.36

Post-development calculator inputs

4.5 Details of the habitats and landscaping plan for the scheme were provided by Southern Green (see Figure 3, Appendix 1). The habitats indicated in Figure 3 are presented only in general terms, although a species list for each habitat type is provided. These species lists were used to determine

the appropriate Metric 3.1 habitat type for the post-development scenario. The feasibility of creating these habitats at the Site, given landscape conditions there, has been considered in this assessment.

4.6 Table 4 presents area habitats in the post-development scenario, including retained habitats. Table 5 presents the proposed post-development scenario for hedgerows.

4.7 These habitats are discussed in more detail following Tables 4 and 5.

Table 4: Post-development scenario inputs – area-based habitats

Metric 3.1 Habitat Type	Area (ha)	Target Condition	Strategic Significance	Comment	BU Score
Other woodland; mixed	0.050	Moderate	Formally identified in local strategy	Retained from baseline	0.46
Urban tree	0.041	Moderate	Formally identified in local strategy	Retained from baseline	0.38
Urban tree	0.073	Moderate	Formally identified in local strategy	Retained from baseline	0.67
Other woodland; broadleaved	0.336	Moderate	Formally identified in local strategy	Native woodland per Figure 3	1.81
Urban tree	0.342	Moderate	Formally identified in local strategy	84 native trees to be provided	1.20
Mixed scrub	0.045	Moderate	No local strategy	Native scrub mix per Figure 3	0.30
Modified grassland	0.545	Poor	No local strategy	Verge grassland planting (Figure 3)	1.05
Other neutral grassland	0.074	Moderate	No local strategy	Wildflower grass mix	0.50
Sustainable urban drainage feature	0.036	Good	No local strategy	SUDS basin – wet meadow mix and emergent vegetation	0.12
Developed land; sealed surface	0.830	N/A	No local strategy	Road and pavement	0.00
Total	2.11			Total	6.49

Table 5: Post-development scenario inputs – linear habitats

Metric 3.1 Habitat Type	Length (m)	Target Condition	Strategic Significance	Comment	BU Score
Native species rich hedgerow	282	Moderate	Formally identified in local strategy	Proposed native hedge (per Figure 3)	2.17
Native species rich hedgerow	143	Moderate	Formally identified in local strategy	Proposed native hedge (per Figure 3)	1.10
Native species rich hedgerow	51	Moderate	Formally identified in local strategy	Proposed native hedge (per Figure 3)	0.39
Total	476			Total	3.66

Area-based habitats

Woodland

4.8 The landscape plan retains a small area of existing mixed woodland, whilst providing 0.336 ha of new broadleaved woodland within the scheme. The new woodland was input as “other woodland; broadleaved” due to the species list comprising entirely of broad-leaved species. A mix of native tree species and native shrub understorey is proposed. Species include field maple *Acer campestre*, silver birch *Betula pendula*, oak *Quercus robur*, rowan *Sorbus aucuparia*, goat willow *Salix caprea*, crab apple *Malus sylvestris*, wild cherry *Prunus avium*, and alder *Alnus glutinosa*. The proposed shrub layer will include dogwood *Cornus sanguinea*, hazel *Corylus avellana*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, ivy *Hedera helix*, honeysuckle *Lonicera periclymenum*, blackthorn

Prunus spinosa, grey willow *Salix cinerea*, elder *Sambucus nigra*, guelder rose *Viburnum opulus*, and wayfaring tree *Viburnum lantana*.

- 4.9 Woodland is formally identified in the County Durham Plan (Durham County Council 2020) and so the highest strategic significance modifier was selected. “Moderate” was selected as the target condition for the newly planted woodland; the existing woodland was identified as being of moderate condition, therefore conditions within the Site are considered likely to enable this condition. Creation of moderate condition woodland is deemed to be low difficulty, per Panks et al. 2022.

Modified grassland

- 4.10 The road verges will be seeded with a fine lawn grass mix, including common bent grass *Agrostis capillaris*, red fescue *Festuca rubra* and a red fescue subspecies *Festuca rubra commutata*.
- 4.11 Whilst the presence of only three species per square meter would limit the condition of such an area of grassland to “poor” (based on the assessment criteria in Panks et al. (2022)), it is considered unlikely that once the grassland has established that only those three species will be present due to the presence of other seeds in the soil. The target condition was therefore input as “moderate”. Low-distinctiveness grassland habitats are not listed in the County Durham Plan (Durham County Council 2020), therefore the lowest strategic significance modifier was selected. Creation of this habitat is deemed to be low difficulty, per Panks et al. 2022.

Other neutral grassland

- 4.12 A hedgerow wildflower grassland mix produced by Emorsgate (mix EH1) is proposed to be seeded in areas away from the road in the landscape plan. This mix contains common bent grass, sweet vernal grass *Anthoxanthum odoratum*, false brome *Brachypodium sylvaticum*, crested dogs tail *Cynosurus cristatus*, tufted hair grass *Deschampsia cespitosa*, red fescue, and wood meadow-grass *Poa nemoralis*. Wildflowers within the mix include yarrow *Achillea millefolium*, garlic mustard *Alliaria petiolate*, cow parsley *Anthriscus sylvestris*, grey sedge *Carex divulsa*, common knapweed *Centaurea nigra*, rough chervil *Chaerophyllum temulum*, crosswort *Cruciata laevipes*, teasel *Dipsacus fullonum*, hedge bedstraw *Galium album*, meadow crane’s-bill *Geranium pratense*, hedge crane’s-bill *Geranium pyreniacum*, wood avens *Geum urbanum*, field scabious *Knautia arvensis*, ox-eye daisy *Leucanthemum vulgare*, musk mallow *Malva moschata*, ribwort plantain *Plantago lanceolata*, red campion *Silene dioica*, ragged robin *Silene flos-cuculi*, and upright hedge parsley *Torilis japonica*.
- 4.13 Given the number of species included in this species mix, it is considered likely that the grassland areas seeded will attain moderate condition. The Metric 3.1 calculator indicates that the difficulty of creation of Other neutral grassland in moderate condition is low. The habitat was assigned the “no local strategy” modifier for strategic significance as this grassland habitat type is not listed in the County Durham Plan (Durham County Council 2020).

Mixed scrub

- 4.14 Areas of mixed scrub will be planted between the woodland and grassland habitats. Species to be planted include field maple, silver birch, dogwood, hazel, hawthorn, holly, wild privet *Ligustrum vulgare*, crab apple, blackthorn, English oak, guelder rose, and wayfaring tree. This habitat is expected to achieve moderate condition due to the species mix proposed. Scrub is not listed in the County Durham Plan (Durham County Council 2020) and was therefore assigned the “no local strategy” strategic significance modifier.

Sustainable urban drainage feature

- 4.15 A sustainable urban drainage feature will be created in the form of a soakaway pond. It is proposed the feature will contain Emorsgate EM8 wildflower grassland mix a meadow mixture for wetlands) and additional planting of emergent species which are yet to be determined. Included in the mix are common bent, sweet vernal grass, quaking grass *Briza media*, crested dog’s-tail, sheeps fescue *Festuca ovina*, red fescue, and smaller cat’s tail grass *Phleum bertolonii*. Also included are yarrow, common knapweed, greater knapweed *Centaurea scabiosa*, wild carrot *Daucus carota*, viper’s

bugloss *Echium vulgare*, hemp agrimony *Eupatorium cannabinum*, lady's bedstraw *Galium verum*, field scabious, rough hawkbit *Leontodon hispidus*, ox-eye daisy, bird's-foot trefoil *Lotus corniculatus*, musk mallow, sainfoin *Onobrychis viciifolia*, oregano *Origanum vulgare*, cowslip *Primula veris*, selfheal *Prunella vulgaris*, meadow buttercup *Ranunculus acris*, yellow rattle *Rhinanthus minor*, red campion, bladder campion *Silene vulgaris*, red clover *Trifolium pratense*, and tufted vetch *Vicia cracca*.

- 4.16 This planting plan provides more than one ecotone within the SUDS and uses entirely native and appropriate plant species. The feature was input to the Metric in “good” condition, achieving which is considered to be of “medium” difficulty under Natural England guidance (Panks et al. 2022) . The “low” strategic significance modifier was selected due to SUDS features not being listed on the County Durham Plan (Durham County Council 2020).

Urban trees

- 4.17 A total of 84 trees will be provided under the landscape plan. The trees will be situated along the new road verges and within the wider landscaping area. Species to be planted include alder, silver birch, downy birch *Betula pubescens*, wild cherry, bird cherry *Prunus padus*, English oak, willow *Salix* sp., whitebeam *Sorbus aria*, rowan, small-leaved lime *Tilia cordata*, Norway maple *Acer platanoides*, red maple *Acer rubrum*, and hornbeam *Carpinus betulus*.
- 4.18 The total area for these trees was calculated using the in-built street tree helper within the Metric 3.1 calculator, with the size selected, on a precautionary basis, as “small”. This resulted in 0.342 ha. The target condition was set to “moderate” and the “high” strategic significance modifier was selected as trees are listed in the County Durham Plan (Durham County Council 2020).

Hedgerows

- 4.19 Three hedgerows of varying length will be provided. These were input to the Metric separately as native species rich hedges in moderate condition. The “high” strategic significance modifier was selected as hedgerows are listed in the County Durham Plan (Durham County Council 2020).
- 4.20 The species to be plated include field maple, hazel, hawthorn, holly, wild privet *Ligustrum vulgare*, crab apple, blackthorn, dog rose *Rosa canina*, and guelder rose.

Developed land – sealed surface

- 4.21 The remaining road and pavement infrastructure to be built was input as “developed land – sealed surface”. This habitat does not require a target condition and was assigned the “low” strategic significance.

5 Results and Conclusions

Key Results

Baseline score

- 5.1 Based on the baseline habitats described in Tables 2 and 3, the DEFRA Metric 3.1 calculator indicates a baseline score of 11.04 BU for area habitats and 1.36 BU for linear habitats.

Post-development score

- 5.2 Using the landscape plan provided, the development will result in a 41.18 % (or 4.55 BU) loss with an end score of 6.49 BU for area-based units.
- 5.3 For area habitats an additional 4.66 BU are required to provide a 1 % net gain.
- 5.4 Based on the post-development scenario, a 169.60 % (or 2.31 BU) gain for linear habitats is predicted with an end score of 3.66 BU.
- 5.5 Fully mitigating the loss of habitats on the Site is not feasible due to the land-take of the project itself. Following the mitigation hierarchy, options for off-Site compensation should now be considered .

Habitat trading rules

- 5.6 The onsite habitat indicated on the landscape plan does not provide sufficient habitat to meet the habitat trading rules for the 'Other neutral grassland', 'Other woodland; mixed', 'Modified grassland', 'Ruderal/ephemeral', or 'Introduced shrub' habitats at the Site.

Conclusions

- 5.7 The calculation indicates that:
- The proposed development will result in a significant gain of biodiversity units for linear habitats.
 - The proposed development will result an overall net loss of biodiversity units for area-based habitat. Therefore off-site habitat creation or enhancement will be required for it to achieve a biodiversity gain for area habitats.
 - In order to address habitat trading rules for grassland, woodland, and scrub habitats offsite creation or enhancement of these habitats will be required.
- 5.8 Further biodiversity calculation will be required to determine the number of biodiversity units that can be provided off-site. An off-site location is not yet identified. The required offsite biodiversity compensation could be provided through the use of areas of low-distinctiveness habitats (e.g., arable land or modified grassland) for habitat creation, or through the enhancement of existing areas of habitat, such as woodland.
- 5.9 To inform any off-Site compensation, further survey work will be required. This should include a habitat survey and associated condition assessment.

6 References

Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020). *The UK Habitat Classification User Manual*. UKHab.

BSG Ecology (2022). *Low Copelaw – A167 Junction Improvement Scheme PEA Report*. A report to Durham County Council.

CIEEM (2021). *Biodiversity Net Gain Report & Audit Templates*. Chartered Institute of Ecology and Environmental Management, Winchester, UK.

Durham County Council (2020). *County Durham Plan Adopted 2020*. Accessed at <https://www.durham.gov.uk/media/34069/County-Durham-Plan-adopted-2020-/pdf/CountyDurhamPlanAdopted2020vDec2020.pdf?m=637725862605900000> on 16/12/2022

JNCC (2016). *Handbook for Phase 1 Habitat Survey*. Joint Nature Conservation Committee, Peterborough.

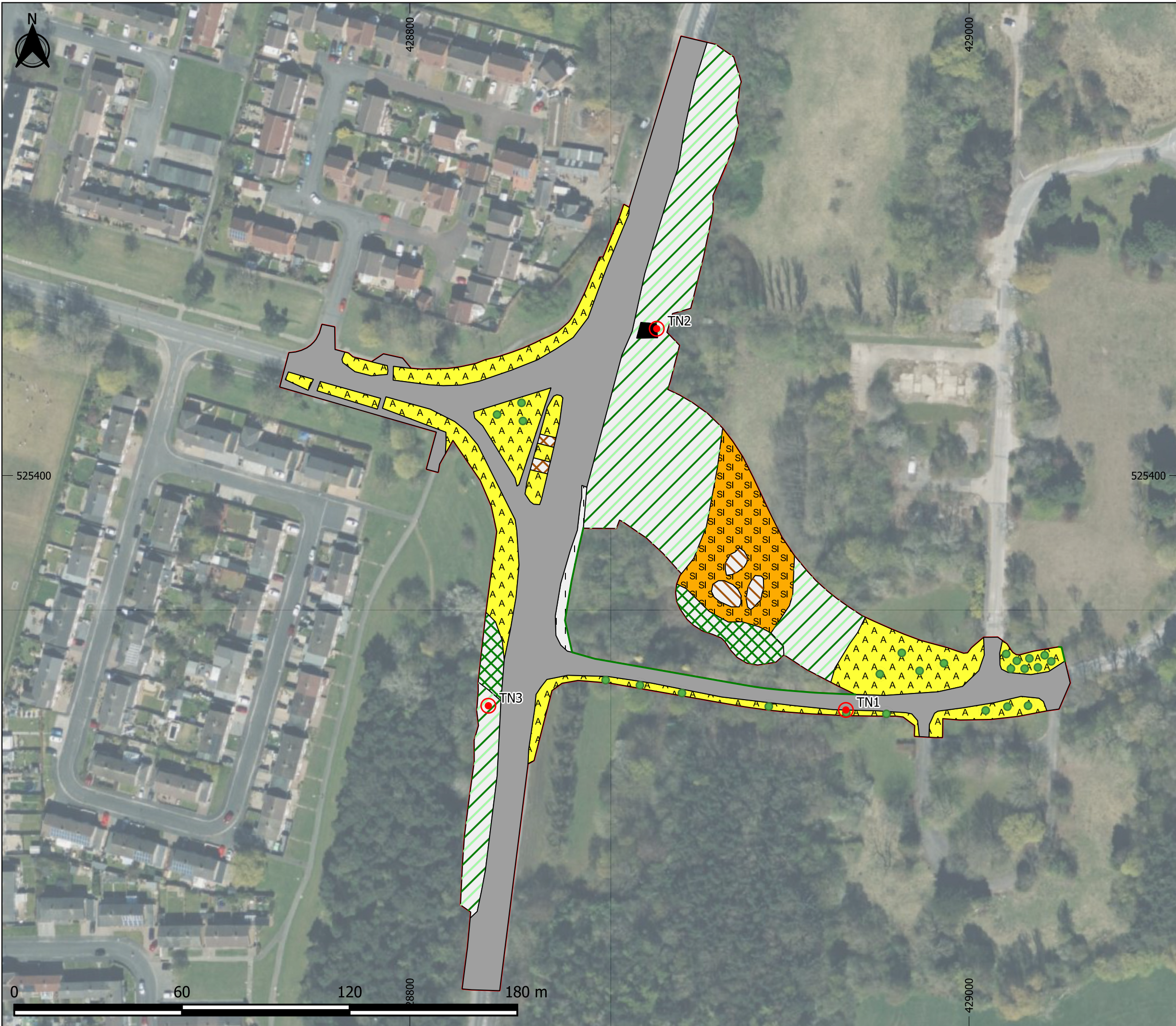
Panks, S., White, N., Newsome, A., Nash, M., Potter, J., Heydon, M., Mayhew, E., Alvarez, M., Russell, T., Cashon, C., Goddard, F., Scott, S., Heaver, M., Scott, S., Treweek, J., Butcher, B., Stone, D. (2022) *Biodiversity metric 3.1: Auditing and accounting for biodiversity – User Guide*. Natural England.

Appendix 1: Figures

Figure 1: Phase 1 habitats

Figure 2: UKHab habitats

Figure 3: 1286_100 Landscape Strategy_Proposed Access (2nd DRAFT); provided by Southern Green



- Legend
- Site boundary
 - Mixed woodland - plantation
 - Scrub - dense/continuous
 - Neutral grassland - semi-improved
 - Improved grassland
 - Other tall herb and fern - ruderal
 - Cultivated/disturbed land - amenity grassland
 - Introduced shrub
 - Built up areas inc. hardstanding
 - Buildings
 - Intact hedge - species-poor
 - Existing medium tree
 - Existing small tree
 - Target note



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PROJECT TITLE
 LOW COPELAW JUNCTION PROPOSAL

DRAWING TITLE
 Figure 1: Phase 1 habitat survey

DATE: 09/12/2022 CHECKED: JH SCALE: 1:1,300
 DRAWN: EW APPROVED: JG VERSION: 1.0

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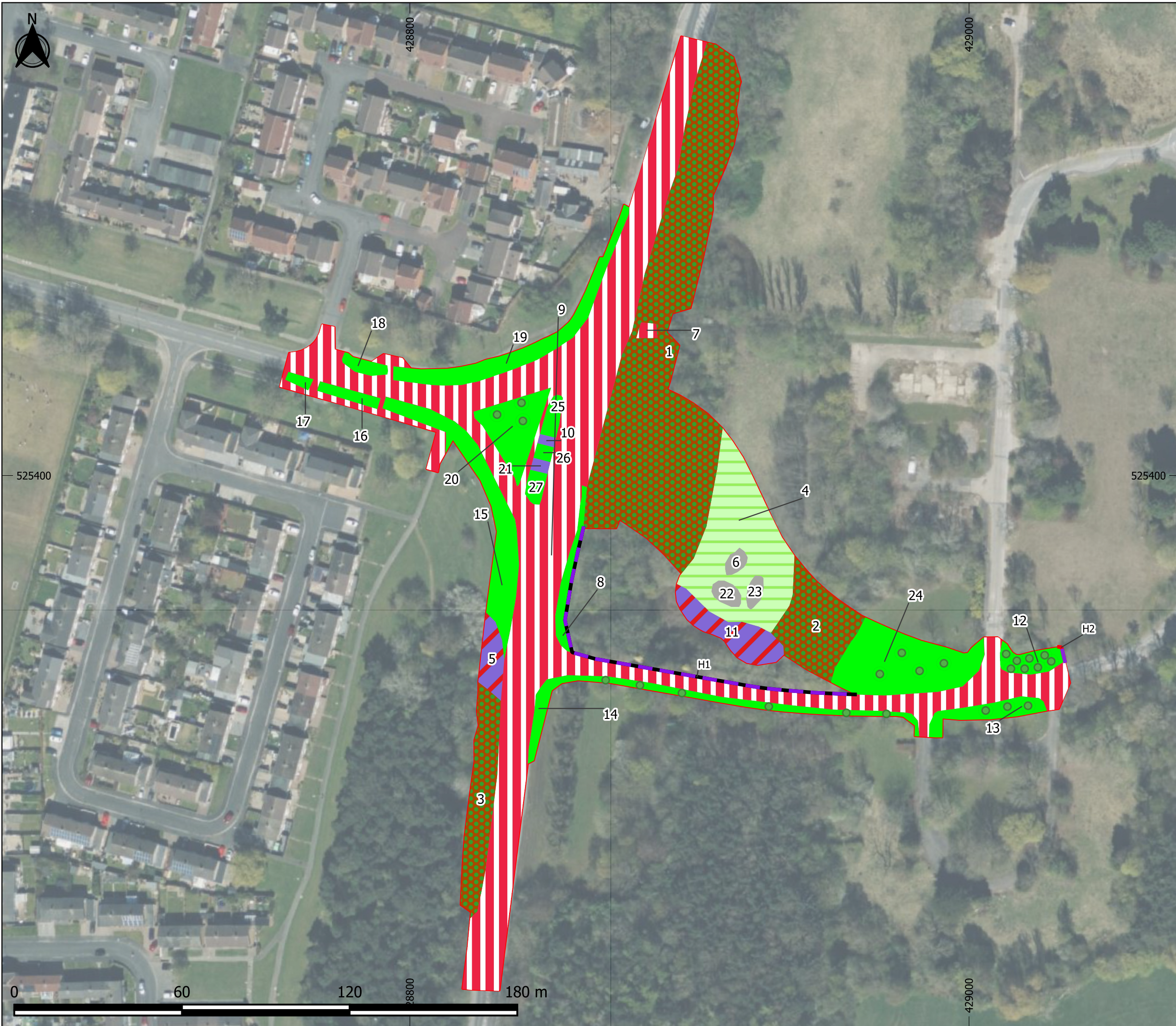
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Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data

Graphics Ref. No.: 03223



- Legend
- Site boundary
 - Bramble scrub
 - Developed land; sealed surface
 - Introduced shrub
 - Modified grassland
 - Other neutral grassland
 - Other woodland; mixed
 - Ruderal/Ephemeral
 - Hedge Ornamental Non Native (h2NE3)
 - Native Species Rich Hedgerow (h2NE2)
 - Existing medium tree
 - Existing small tree

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PROJECT TITLE
 LOW COPELAW JUNCTION PROPOSAL

DRAWING TITLE
 Figure 2: Baseline habitats (UKHab symbology)

DATE: 15/12/2022 CHECKED: JH SCALE: 1:1,300
 DRAWN: EW APPROVED: JG VERSION: 1.0

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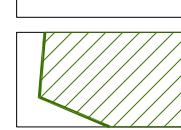

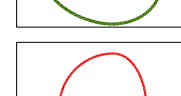
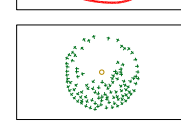
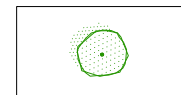
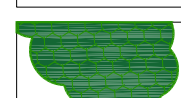
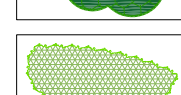
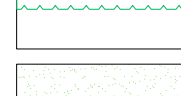
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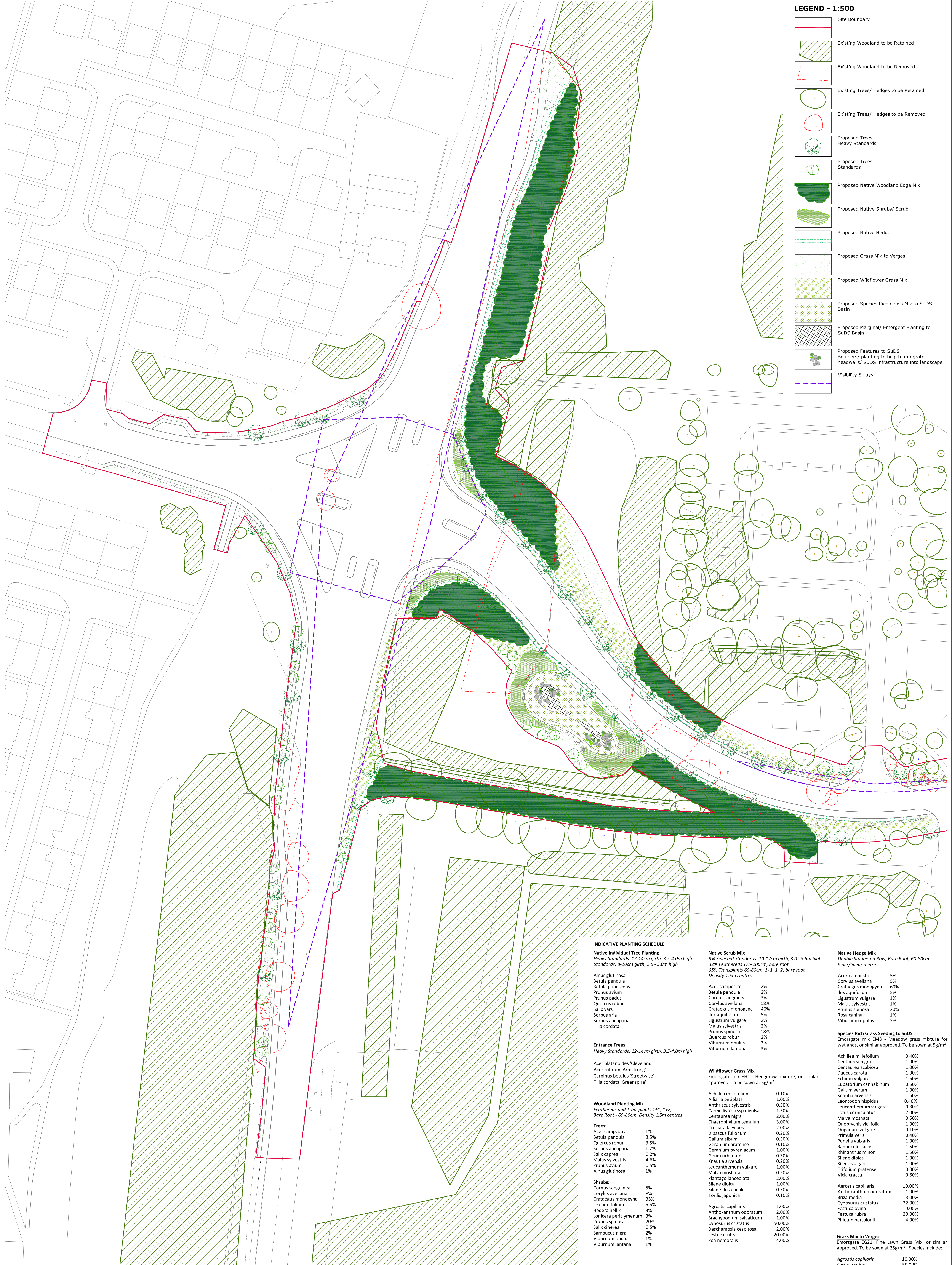
Projection: OSGB 1936/British National Grid - EPSG 27700

Sources: BSG Ecology survey data

Graphics Ref. No.: 02267

LEGEND - 1:500

-  Site Boundary
-  Existing Woodland to be Retained
-  Existing Woodland to be Removed
-  Existing Trees/ Hedges to be Retained
-  Existing Trees/ Hedges to be Removed
-  Proposed Trees Heavy Standards
-  Proposed Trees Standards
-  Proposed Native Woodland Edge Mix
-  Proposed Native Shrubs/ Scrub
-  Proposed Native Hedge
-  Proposed Grass Mix to Verges
-  Proposed Wildflower Grass Mix
-  Proposed Species Rich Grass Mix to SuDS Basin
-  Proposed Marginal/ Emergent Planting to SuDS Basin
-  Proposed Features to SuDS Boulders/ planting to help to integrate headwalls/ SuDS infrastructure into landscape
-  Visibility Splays



INDICATIVE PLANTING SCHEDULE

Native Individual Tree Planting
Heavy Standards: 12-14cm girth, 3.5-4.0m high
Standards: 8-10cm girth, 2.5 - 3.0m high

- Alnus glutinosa
 - Betula pendula
 - Prunus avium
 - Prunus paeus
 - Quercus robur
 - Salix vars
 - Sorbus aria
 - Sorbus aucuparia
 - Tilia cordata
- Entrance Trees**
 Heavy Standards: 12-14cm girth, 3.5-4.0m high
- Acer platanoides 'Cleveland'
 - Acer rubrum 'Armstrong'
 - Carpinus betulus 'Streetwise'
 - Tilia cordata 'Greenspire'

Woodland Planting Mix
 Featherseds and Transplants 1+1, 1+2,
 Bare Root - 60-80cm, Density 1.5m centres

- Trees:**
- Acer campestre 1%
 - Betula pendula 3.5%
 - Quercus robur 3.5%
 - Sorbus aucuparia 1.7%
 - Salix caprea 0.2%
 - Malus sylvestris 4.6%
 - Prunus avium 0.5%
 - Alnus glutinosa 1%
- Shrubs:**
- Cornus sanguinea 5%
 - Corylus avellana 8%
 - Crataegus monogyna 35%
 - Ilex aquifolium 5.5%
 - Hedera helix 3%
 - Lonicera periclymenum 3%
 - Prunus spinosa 20%
 - Salix cinerea 0.5%
 - Sambucus nigra 2%
 - Viburnum opulus 1%
 - Viburnum lantana 1%

Native Scrub Mix
 3% Selected Standards: 10-12cm girth, 3.0 - 3.5m high
 32% Featherseds 175-200cm, bare root
 65% Transplants 60-80cm, 1+1, 1+2, bare root
 Density 1.5m centres

- Acer campestre 2%
- Betula pendula 2%
- Cornus sanguinea 3%
- Corylus avellana 18%
- Crataegus monogyna 40%
- Ilex aquifolium 5%
- Ligustrum vulgare 2%
- Malus sylvestris 2%
- Prunus spinosa 18%
- Quercus robur 2%
- Viburnum opulus 3%
- Viburnum lantana 3%

Wildflower Grass Mix
 Emorsgate mix EH1 - Hedgerow mixture, or similar
 approved. To be sown at 5g/m²

- Achillea millefolium 0.10%
- Alliaria petiolata 1.00%
- Anthriscus sylvestris 0.50%
- Carex divisa ssp divisa 1.50%
- Centaurea nigra 2.00%
- Chaerophyllum temulum 3.00%
- Cruciata laevipes 2.00%
- Dipascus fullorum 0.20%
- Galium album 0.50%
- Geranium pratense 0.10%
- Geranium pyreniacum 1.00%
- Geum urbanum 0.30%
- Knautia arvensis 0.20%
- Leucanthemum vulgare 1.00%
- Malva moschata 0.50%
- Plantago lanceolata 2.00%
- Silene dioica 1.00%
- Silene flos-cuculi 0.50%
- Torilis japonica 0.10%
- Agrostis capillaris 1.00%
- Anthoxanthum odoratum 2.00%
- Brachypodium sylvaticum 1.00%
- Cynosurus cristatus 50.00%
- Deschampsia cespitosa 2.00%
- Festuca rubra 20.00%
- Poa nemoralis 4.00%

Native Hedge Mix
 Double Staggered Row, Bare Root, 60-80cm
 6 per/linear metre

- Acer campestre 5%
- Corylus avellana 5%
- Crataegus monogyna 60%
- Ilex aquifolium 5%
- Ligustrum vulgare 1%
- Malus sylvestris 1%
- Prunus spinosa 20%
- Rosa canina 1%
- Viburnum opulus 2%

Species Rich Grass Seeding to SuDS
 Emorsgate mix EM8 - Meadow grass mixture for
 wetlands, or similar approved. To be sown at 5g/m²

- Achillea millefolium 0.40%
- Centaurea nigra 1.00%
- Centaurea scabiosa 1.00%
- Daucus carota 1.00%
- Echium vulgare 1.50%
- Eupatorium cannabinum 0.50%
- Galium verum 1.00%
- Knautia arvensis 1.50%
- Leontodon hispidus 0.40%
- Leucanthemum vulgare 0.80%
- Lotus corniculatus 2.00%
- Malva moschata 0.50%
- Onobrychis vicifolia 1.00%
- Origanum vulgare 0.10%
- Primula veris 0.40%
- Punella vulgaris 1.00%
- Ranunculus acris 1.50%
- Rhinanthus minor 1.50%
- Silene dioica 1.00%
- Silene vulgaris 1.00%
- Trifolium pratense 0.30%
- Vicia cracca 0.60%
- Agrostis capillaris 10.00%
- Anthoxanthum odoratum 1.00%
- Britia media 3.00%
- Cynosurus cristatus 32.00%
- Festuca ovina 10.00%
- Festuca rubra 20.00%
- Phleum bertolonii 4.00%

Grass Mix to Verges
 Emorsgate EG21 - Fine Lawn Grass Mix, or similar
 approved. To be sown at 25g/m². Species include:

- Agrostis capillaris 10.00%
- Festuca rubra 50.00%
- Festuca rubra ssp commutata 40.00%

Rev	Description	By	Chk	Date
--	Draft Issue	DH	SL	10.01.23
--	2nd Draft Issue. Visibility splays added and landscape adjusted accordingly	DH	SL	19.01.23

NOTES - IF IN DOUBT, ASK

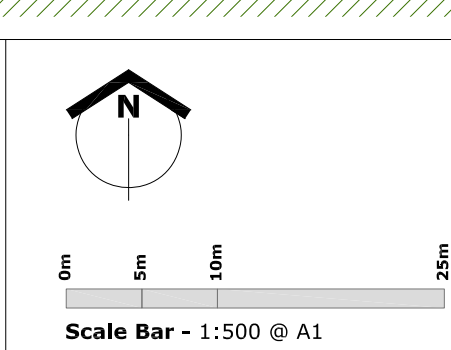
- Do not scale directly from this drawing.
- All dimensions are in metres.
- All levels are shown in metres Above Ordnance Datum (AOD).
- All levels and dimensions are to be checked on site by the site manager/contractor prior to commencing any works or ordering any materials.
- This drawing is to be viewed in conjunction with all other detailed drawings and specifications from all members of the design team.
- Any conflicts/discrepancies are to be highlighted to Southern Green prior to commencing works or ordering any materials.

CDM - SAFETY, HEALTH & ENVIRONMENTAL INFORMATION
 Principal Designer: Refer to Client

In addition to the hazards/ risks normally associated with the types of work detailed on this drawing, note the following project specific risks which require attention/ mitigation by the contractor undertaking the works:

Construction/ Maintenance/ Cleanings/ Decommissioning/ Demolition: none identified at this time

It is assumed that all works will be carried out by a competent contractor, working where appropriate, to their own approved method statement. This is not an exhaustive list and reference must be made to the Construction Phase Plan or Health and Safety File and any additional Risk Assessment documents available.



1286_LOW COPELAW

Durham County Council

Landscape Strategy - Proposed Access

1286_000 Rev -

1:500 @ A1 03.01.23 DL17

DRAFT

Drawing Issue Status

Comment/ Approval Contract

Costing Construction

Planning Record DWG

Tender BIM

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Appendix 2: Condition assessment scores and quadrat data

Condition Assessment

Table A2-1: Grassland (low distinctiveness) condition score. See quadrat data in Table A2-8.

Condition Assessment Criteria (based on Panks et al. (2022))	This condition assessment covers parcel nos.: 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 25, 26, and 27 ³	Parcel No. 8
Criterion 1: 6-8 species per m ²	6 species per m ² - Pass	8 species per m ² - Pass
Criterion 2: Sward height is varied (at least 20% of sward above 7 cm high and at least 20% below 7 cm high)	Sward height entirely below 7 cm – Fail	Sward height is greater than 7 cm for more than 20% of area and below 7 cm for at least 20% of area – Pass
Criterion 3: Scattered scrub accounts for less than 20% of cover	No scattered scrub present – Pass	No scattered scrub present – Pass
Criterion 4: Physical damage is evident in less than 5% of total area.	Some physical damage evident, but below 5 % cover – Pass	Some physical damage evident, but below 5 % cover – Pass
Criterion 5: Cover of bare ground is between 1% and 10%	Some bare ground present, but below 10 % - Pass	Some bare ground present, but below 10 % - Pass
Criterion 6: Cover of bracken is less than 20%	No bracken present – Pass	No bracken present – Pass
Criterion 7: Absence of invasive non-native species	No invasive non-native species present – pass	No invasive non-native species present – pass
Number of Criteria Met	6	7
Condition	Good	Good

Table A2-2: Grassland (medium and high distinctiveness) condition score. See quadrat data in Table A2-9.

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel No. 4
Criterion 1: Appearance and composition of vegetation closely matches characteristics of specified grassland type. Wildflowers, sedges, and indicator species for specific grassland type are clearly and easily visible throughout	Closely matches other neutral grassland definition, displaying indicator species. - Pass
Criterion 2: Sward height is varied (at least 20% of sward above 7 cm high and at least 20% below 7 cm high)	Areas of taller and shorter sward are present - Pass
Criterion 3: Cover of bracken is less than 20%	Some bare ground present, but below 5 % - Pass
Criterion 4: Cover of bracken is less than 20%	No bracken present – Pass
Criterion 5: Absence of invasive non-native species	No invasive non-native species present – Pass
Criterion 6⁴: There are nine or more species per m ²	Nine species per m ² - Pass
Number of Criteria Met	6
Condition	Good

³ Whilst mapped separately, the grassland present was identified as low distinctiveness and uniform in type and condition across all of these parcels.

⁴ This criterion is essential for achieving good condition for non-acid grassland types

Table A2-3: Woodland condition score⁵

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel Number		
	1	2	3
Criterion 1: age distribution of trees	2	2	1
Criterion 2: herbivore damage (wild, domestic, or feral)	3	3	3
Criterion 3: invasive plant species	2	3	3
Criterion 4: number of native tree species	3	3	2
Criterion 5: cover of native tree and shrub species	2	2	3
Criterion 6: open space within woodland	3	3	3
Criterion 7: woodland regeneration	3	3	1
Criterion 8: tree health	2	2	3
Criterion 9: vegetation and ground flora	1	1	1
Criterion 10: woodland vertical structure	2	2	1
Criterion 11: veteran trees	1	1	1
Criterion 12: amount of deadwood	1	1	1
Criterion 13: woodland disturbance	3	3	1
Total score	28	29	24
Condition	Moderate	Moderate	Poor

Table A2-4: Tall ruderal condition scores⁶

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel Number		
	6	22	23
Criterion 1: varied vegetation structure, providing opportunities for insects, birds, and bats to live and breed. A single ecotone should not account for more than 80% of area	N	N	N
Criterion 2: There is a diverse range of flowering plants providing nectar sources for insects	N	N	N
Criterion 3: invasive non-native cover is less than 5%	Y	Y	Y
Number of criteria met	1	1	1
Condition	Poor	Poor	Poor

Table A2-5: Scrub condition scores⁷

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel Number
	5
Criterion 1: habitat representative of UKHab description (where in its natural range). At least three woody species, with no one species comprising more than 75% cover	N
Criterion 2: good age range – all following are present: seedlings, young shrubs, mature shrubs	N
Criterion 3: there is an absence of invasive non-native species and those indicative of sub-optimal condition make up less than 5% of ground cover	Y

⁵ The woodland condition assessment scores 13 criteria from 1 – 3 and sums the score to provide the overall condition.

⁶ Using “urban” habitat type assessment sheets. Only core criteria used, since habitat does not conform to any sub-types.

⁷ Condition assessment is not applicable to bramble scrub, therefore only parcel 5 is assessed.

Criterion 4: scrub has well-developed edge with scattered scrub and tall grassland/herb between scrub and adjacent habitats	N
Criterion 5: clearings, glades, or rides present	N
Number of Criteria Met	1
Condition	Poor

Table A2-6: Urban trees

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel Number	
	28	29
Criterion 1: Tree is native species, or more than 70 % of group	Y	Y
Criterion 2: Canopy is predominantly continuous with gaps no more than 10 % of area	Y	N
Criterion 3: Tree is mature or veteran, or more than 50 % of block are mature or veteran	N	Y
Criterion 4: Little to no evidence of adverse impact to health by anthropogenic activity	N	N
Criterion 5: Microhabitats for birds mammals, and insects present	N	Y
Criterion 6: More than 20 % of canopy is oversailing vegetation	Y	Y
Total score	4	4
Condition	Moderate	Moderate

Table A2-7: Hedgerow condition score

Condition Assessment Criteria (based on Panks et al. (2022))	Parcel Number	
	H1	H2
Criterion A1: >1.5m average height, along length	Y	N
Criterion A2: >1.5 m average width along length	N	Y
Criterion B1: gap between ground and base of canopy <0.5 m for >90% of length	N	Y
Criterion B2: Gaps make up <10% of total length; no canopy gaps >5 m	Y	N
Criterion C1: >1 m wide strip of undisturbed ground with perennial herbaceous vegetation for > 90% of length: measured from outer edge of hedgerow; present on at least 1 side of hedgerow	Y	N
Criterion C2: plant species indicative of soil nutrient enrichment dominate <20% of undisturbed ground	Y	Y
Criterion D1: >90% of hedgerow and undisturbed ground is free of non-native and neophyte species	N	N
Criterion D2: >90% of hedgerow or undisturbed ground is free of damage caused by human activity	Y	N
Number of criteria met⁸	5	3
Condition	Moderate	Poor

⁸ Condition score is also predicated by number of failures per criterion group (e.g. failing both A1 AND A2 / failing A1, but passing A2).

Botanical Data**Table A2-8:** Quadrat data for habitat parcels 8, 12, 13, 14, 15, 16, 17, 18, 19, 20, 24, 25, 26, and 27 presented using the DAFOR abundance scale (D: dominant; A: abundant; F: frequent; O: occasional; R: rare).

Species	Quadrat 1	Quadrat 2	Quadrat 3	Quadrat 4	Quadrat 5
Daisy <i>Bellis perennis</i>	R	R	R	R	R
Creeping buttercup <i>Ranunculus repens</i>	O	O	O	R	F
Dandelion <i>Taraxacum</i> agg.	R	R	R	O	O
Perennial rye-grass <i>Lolium perenne</i>	D	D	D	D	A
Spear thistle <i>Cirsium vulgare</i>	R			R	
White clover <i>Trifolium repens</i>		R	R	O	R
Ribwort plantain <i>Plantago lanceolata</i>		R	R		
Number of species in 1 m²	5	6	6	6	5
Average	5.6				

Table A2-8: Quadrat data for habitat parcel 4 presented using the DAFOR scale

Species	Quadrat 1
Common bent <i>Agrostis capillaris</i>	D
Yorkshire fog <i>Holcus lanatus</i>	A
False oat grass <i>Arrhenatherum elatius</i>	A
White clover <i>Trifolium repens</i>	A
Birds foot trefoil <i>Lotus corniculatus</i>	F
Sweet vernal grass <i>Anthoxanthum odoratum</i>	O
Red fescue <i>Festuca rubra</i>	O
Creeping cinquefoil <i>Potentilla reptans</i>	O
Selfheal <i>Prunella vulgaris</i>	R
Number of species in 1 m²	9