

Biodiversity Metric Report

Luzlow BESS, Stoke on Trent
Reference: 81-730-R2-2
Date: January 25





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EXECUTIVE SUMMARY

Site Address	Land north west of Armshead Road, Werrington, Stoke-on-Trent, ST9 0ND						
Co-ordinates	E 393307, N 349062						
Site Area	Approximately 2.92 ha						
Current Site Use	The site comprised an arable field with hedgerows and scattered trees lining the northern and western boundary. Arable fields surround the site on all aspects.						
Proposed Development	Development proposals comprise the construction of a battery energy storage system (BESS).						
Results	The biodiversity metric results show a gain of habitat, hedgerow and watercourse units based on the Soft Landscape Proposals and off-site compensation, as follows: <table> <tr> <td>Habitat Units</td><td>+0.95</td></tr> <tr> <td>Hedgerow Units</td><td>+3.26</td></tr> <tr> <td>Watercourse Units</td><td>+0.10</td></tr> </table> A 10.11% gain in habitat units, a 305.83% gain in hedgerow units, and a 10.00% gain in watercourse units will be incurred on-site and off-site as a result of development.	Habitat Units	+0.95	Hedgerow Units	+3.26	Watercourse Units	+0.10
Habitat Units	+0.95						
Hedgerow Units	+3.26						
Watercourse Units	+0.10						
Conclusions and Recommendations	The construction of the BESS on-site will result in a loss of 2.29 habitat units and 0.13 watercourse units, with a gain of 3.26 hedgerow units (305.83%) on-site. Other neutral grassland, individual trees and a ditch will be created within an off-site compensation area south of the site boundary but within the wider ownership boundary. As a result, the scheme will achieve an overall gain of 0.95 habitat units (10.11%), a gain of 0.10 watercourse units (10.00%) and a gain of 3.26 hedgerow unit gain (305.83%) with the on-site and off-site compensation. A 10% gain will be achieved as a result in relation to habitat units, hedgerow units and watercourse units, and the trading rules will be satisfied in line with the Environment Act 2021. Additional species enhancements could be provided on-site, which could include bat and bird boxes on mature trees within the wider ownership boundary, hedgehog houses and hibernacula.						



Table of Contents

EXECUTIVE SUMMARY	3
1.INTRODUCTION	5
1.1. Background	5
1.2. Previous Surveys	5
1.3. Site Location	5
1.4. Objectives	6
2.METHODOLOGY	7
2.1. Biodiversity Metric	7
2.2. On-Site and off-site Habitat Baseline Data	7
2.3. Post Development Habitat Creation	7
2.4. Limitations	7
3.RESULTS	8
3.1. On-Site Baseline Habitat Condition Assessment Results	8
3.2. On-Site Habitat Retention	9
3.3. On-Site Habitat Enhancement	9
3.4. Habitat Creation Condition Assessment	10
3.5. Off-Site Baseline Condition Assessment Results	12
3.6. Off-Site Creation Condition Assessment Results	13
3.7. Baseline Watercourse Condition Assessment Results	14
3.8. On-Site Watercourse Creation Condition Assessment	15
3.9. Off-Site Watercourse Creation Condition Assessment	16
3.10. Strategic Significance	19
3.11. Biodiversity Unit Result	19
4.CONCLUSIONS AND RECOMMENDATIONS	20
5.PLANNING APPLICATION INFORMATION	21
6.REFERENCES	22
APPENDIX I UKHAB HABITAT PLAN	23
APPENDIX II SOFT LANDSCAPE PROPOSALS	24
APPENDIX III POST DEVELOPMENT PLAN	25
APPENDIX IV CURRENT AND PROPOSED HEDGEROW CONDITION ASSESSMENTS	26



1. INTRODUCTION

1.1. BACKGROUND

E3P has been instructed by Root Power (South) Limited to undertake a Biodiversity Metric Calculation at Luzlow BESS, Stoke on Trent, hereafter referred to as “the site”.

This report has been produced by Luke Shaw BSc (Hons), Consultant Ecologist at E3P. Luke has attended internal training courses focussing on Biodiversity Net Gain and using the Biodiversity Metric Calculation Tool and has experience undertaking Biodiversity Net Gain and Condition Assessments on a variety of projects across the UK. Luke has undertaken the Modular River Survey training course hosted by Cartographer Studios, focussing on generating River Condition outputs for Natural England's Biodiversity Metric calculations, for which she is accredited.

This report should be read in conjunction with 'The Statutory Biodiversity Metric Calculation Tool – Luzlow BESS, Stoke on Trent'.

1.2. PREVIOUS SURVEYS

E3P undertook a Preliminary Ecological Appraisal on-site in May 2024 (report reference: 81-730-R1). The survey included a Condition Assessment of the on-site habitats. During the survey, the site was found to comprise other neutral grassland, ruderal/ephemeral, native hedgerow and scattered trees.

1.3. SITE LOCATION

The site is located north of Werrington and east of Stoke on Trent. It is located approximately 270 m northwest of Armshead Road. Arable fields surround the site on all aspects and comprise the predominant land use in the surrounding area. Please refer to Figure 1 for the approximate site location.

Figure 1 **Approximate Site Location**





1.4. OBJECTIVES

The objectives of the Biodiversity Metric are to:

- ✦ Identify percentage change in on-site habitat.
- ✦ Identify the number of habitat units lost/gained on-site; and
- ✦ Determine the need for a conservation offset payment or off-site habitat creation.

The findings of the calculation are detailed within this report, along with recommendations.



2. METHODOLOGY

2.1. BIODIVERSITY METRIC

Department for Environment, Food and Rural Affairs' (DEFRA) Statutory Biodiversity Metric was used to undertake the metric calculation. The metric was undertaken following guidance as detailed within the Statutory Biodiversity Metric: User Guide (DEFRA, 2024).

This report has been produced by Luke Shaw. Luke has attended internal training courses focussing on Biodiversity Net Gain and using the Biodiversity Metric Calculation Tool and has experience undertaking Biodiversity Net Gain and Condition Assessments on a variety of projects across the UK. Luke has undertaken the Modular River Survey training course hosted by Cartographer Studios, focussing on generating River Condition outputs for Natural England's Biodiversity Metric calculations, for which he is accredited.

This metric was reviewed by Associate Director Celia Barlow, BSc (Hons) MSc MEnvSc CEnv MCIEEM. Celia has undertaken a number of online training courses with CIEEM including 'Calculating and Using Biodiversity Units with Metric 2.0' and 'Biodiversity Net Gain Through Development'. Celia has also completed Condition Assessments on a number of sites across the UK and holds a Level 3 Field Identification Skills Certificate (FISC).

2.2. ON-SITE AND OFF-SITE HABITAT BASELINE DATA

The baseline data used to inform the condition assessment for the on-site and off-site was collected on 31st May 2024 during the Preliminary Ecological Appraisal. The Statutory Biodiversity Metric Condition Assessment Sheets (DEFRA, 2024) were used to undertake the condition assessment. The methodology follows the Statutory Biodiversity Metric: User Guide (Natural England, 2024).

On-site and off-site baseline habitats were measured off the UKHab Habitat Plan using QGIS and input into the metric. The metric's tree helper was used to estimate the Root Protection Areas (RPAs) of the on-site trees. Please see Appendix I for the UKHab Habitat Plan.

2.3. POST DEVELOPMENT HABITAT CREATION

The Soft Landscape Proposals (LVIA Ltd, 2024, drawing reference: YLEM1482-11 RevD) was used to measure proposed habitat creation on site. Off-site habitat creation was recommended by E3P. A Post Development Plan has been created to show the areas of habitats measured from the Soft Landscape Proposals.

Please see Appendix II for the Sketch Layout Additional Plots Plan and Appendix III for the Post-Development Plan.

2.4. LIMITATIONS

Some areas on the site are double counted, including root protection zones and areas of habitat, where overlap is shown. This means areas of habitat pre- and post-development do not total to the same area.



3. RESULTS

3.1. ON-SITE BASELINE HABITAT CONDITION ASSESSMENT RESULTS

Table 1 shows the details of the habitat condition assessment used for input into the metric calculation tool.

Table 1 Habitat Baseline Condition Assessment Results

HABITAT TYPE (PH1)	AREA/LENGTH (HA/KM)	CONDITION ASSESSMENT	DESCRIPTION
Grassland – Other Neutral Grassland	2.0082	Poor	Fails Criterion 1, which is essential for achieving moderate or good condition, as the habitat does not contain a consistently high proportion of indicator species.
Sparsely Vegetated Land – Ruderal/Ephemeral	0.0147	Poor	Passes 1 of 3 condition assessment criteria: Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.
Individual Trees – Urban Tree	0.0651 (4 medium trees)	Moderate	Passes 4 of 6 condition assessment criteria: ✦ The tree is a native species. ✦ The tree canopy is predominantly continuous (individual trees automatically pass this criterion). ✦ The tree is mature. ✦ At least 20% of tree canopy is oversailing vegetation beneath.
Native Hedgerow	0.102 (H1)	Moderate	No more than 4 failures in total; AND Does not fail both attributes in more than one functional group Please see Appendix IV for the Full Hedgerow Condition Assessment.



HABITAT TYPE (PH1)	AREA/LENGTH (HA/KM)	CONDITION ASSESSMENT	DESCRIPTION
Native Hedgerow	0.14 (H2)	Moderate	No more than 4 failures in total; AND Does not fail both attributes in more than one functional group Please see Appendix IV for the Full Hedgerow Condition Assessment.

3.2. ON-SITE HABITAT RETENTION

Hedgerow 2 will be largely retained except small areas requiring removal to facilitate the construction of the access track. Please see Table 2 for the length and condition of the retained hedgerow.

Table 2 **Habitat Retention**

HABITAT TYPE (UKHAB)	LENGTH (KM)	CONDITION
Native Hedgerow (H2)	0.128	Moderate

3.3. ON-SITE HABITAT ENHANCEMENT

Hedgerow 1 located along the northern site boundary will be enhanced to a species-rich native hedgerow with trees. Please see Table 3 for the length and condition of the hedgerow to be enhanced.



Table 3 Habitat Enhancement Condition Assessment Results

PRE-DEVELOPMENT HABITAT TYPE (UKHAB)	POST-DEVELOPMENT HABITAT TYPE (UKHAB)	LENGTH (KM)	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
Native Hedgerow (H1)	Species-rich native hedgerow with trees	0.102	Moderate No more than 4 failures in total; AND Does not fail both attributes in more than one functional group Please see Appendix IV for the Full Hedgerow Condition Assessment	10 years

3.4. HABITAT CREATION CONDITION ASSESSMENT

As per the Soft Landscape Proposals, the site will comprise a BESS and an access road, with associated landscaping. Table 4 shows the details of the target condition assessment and total areas of habitat creation. It has been assumed that there will be no significant delay in the creation of the proposed habitat features, as such the delay in starting habitat creation has been set to zero.

Table 4 Habitat Creation Condition Assessment Results

HABITAT TYPE (SOFT LANDSCAPE PROPOSALS)	HABITAT TYPE (UKHAB)	AREA/LENGTH (HA/KM)	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
Proposed Hardstanding Areas	Urban – Developed Land; Sealed Surface	1.0505	N/A	N/A
Proposed Other Neutral Grassland Areas	Grassland – Other Neutral Grassland	0.9110	Moderate Passes 4 of 6 condition assessment criteria:	Five years.



HABITAT TYPE (SOFT LANDSCAPE PROPOSALS)	HABITAT TYPE (UKHAB)	AREA/LENGTH (HA/KM)	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
			- 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. - 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 insects, birds and small mammals to live and breed. - Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%. - 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 management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA5) are present, this criterion is automatically failed.	
Proposed Mixed Native Planting	Heathland and Shrub – Mixed Scrub	0.0603	Moderate Passes 3 of 5 condition assessment criteria: The parcel represents a good example of its habitat type- the appearance and composition of 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 and no single species comprises more than 75% of the cover.	Five years



HABITAT TYPE (SOFT LANDSCAPE PROPOSALS)	HABITAT TYPE (UKHAB)	AREA/LENGTH (HA/KM)	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
			- There is an absence of invasive non-native plant species (as listed on Schedule 9 of WCA) and species indicative of suboptimal condition make up less than 5% of ground cover. - There are clearings, glades or rides present within the scrub, providing sheltered edges.	
Proposed Mixed Native Species Hedgerow	Native Hedgerow with Trees	0.435	Moderate No more than 4 failures in total; AND Does not fail both attributes in more than one functional group Please see Appendix IV for the Full Hedgerow Condition Assessment.	Ten years

3.5. OFF-SITE BASELINE CONDITION ASSESSMENT RESULTS

Off-site habitat enhancement has been recommended by E3P within the wider ownership boundary to the south and west of the redline boundary Table 5 shows the baseline habitat details within this off-site area used for input into the metric calculation tool.

Table 5 Off-Site Habitat Baseline Condition Assessment Results

HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION ASSESSMENT	DESCRIPTION
Grassland – Other Neutral Grassland	0.9	Poor	Fails Criterion 1, which is essential for achieving moderate or good condition, as the habitat does not contain a consistently high proportion of indicator species



3.6. OFF-SITE CREATION CONDITION ASSESSMENT RESULTS

Other neutral grassland and individual small rural tree planting have been proposed outside of the site boundary within the wider ownership boundary. Table 6 shows the details of the target condition assessment and total area of habitat creation. It has been assumed that there will be no significant delay in the creation of the proposed habitat feature, as such the delay in starting habitat creation has been set to zero. Due to the proximity of the proposed off-site habitat creation to the site, the spatial risk category has been defined as 'compensation inside LPA boundary or NCA of impact site'.

Table 6 Off-Site Habitat Creation Condition Assessment Results

HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION ASSESSMENT	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
Grassland – Other Neutral Grassland	0.3	Moderate	Passes 3 of 5 condition assessment criteria: - 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. This criterion is essential for achieving Moderate condition. - Cover of bracken (<i>Pteridium aquilinum</i>) is less than 20% and cover of scrub, including bramble (<i>Rubus fruticosus agg.</i>) is less than 5%. - Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area.	Five years
Individual Trees – Rural Tree	0.1710 (x42 small trees)	Moderate	Passes 3 of 5 condition assessment criteria:	27 years



HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION ASSESSMENT	TARGET CONDITION/DESCRIPTION	TARGET TIME TO CONDITION
			- The tree is a native species. - 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). - 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.	

3.7. BASELINE WATERCOURSE CONDITION ASSESSMENT RESULTS

A wet ditch was located within the site boundary. The ditch runs along the northern boundary of the site and within the redline boundary to the east of the parcel. Please see Table 7 for a summary of the ditch.

Table 7 Watercourse Condition Assessment Results

WATERCOURSE REFERENCE	HABITAT TYPE (UKHAB)	LENGTH (KM)	PRELIMINARY CONDITION SCORE	FINAL CONDITION CLASS	WATERCOURSE ENCROACHMENT	RIPARIAN ENCROACHMENT
Wet Ditch	Ditches D1	0.234	N/A	Poor Passes 2 of 8 condition assessment criteria: There is less than 10% cover of filamentous algae	No encroachment	No encroachment No encroachment within 5 m of the bank top.



WATERCOURSE REFERENCE	HABITAT TYPE (UKHAB)	LENGTH (KM)	PRELIMINARY CONDITION SCORE	FINAL CONDITION CLASS	WATERCOURSE ENCROACHMENT	RIPARIAN ENCROACHMENT
				and or duckweed <i>Lemna spp.</i> (these are signs of eutrophication). Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.	Less than 5% of bank length comprises an engineered bank revetment and there is no encroachment into the channel.	

3.8. ON-SITE WATERCOURSE CREATION CONDITION ASSESSMENT

Due to the proximity of the development to the right bank top of the ditch, there would be an increase in riparian encroachment, as this will increase the encroachment from 'no encroachment' to 'major'. The ditch has been input into the metric as 'created', which will decrease the overall river units on site. Table 8 shows the details of the target condition assessment and total length of watercourse creation. The creation in advance has been set to 10 years as per the Biodiversity Net Gain Guidance.



Table 8 On-Site Watercourse Creation

WATERCOURSE REFERENCE	HABITAT TYPE (UKHAB)	LENGTH (KM)	FINAL CONDITION CLASS	WATERCOURSE ENCROACHMENT	RIPARIAN ENCROACHMENT
Wet Ditch	Ditches (D1)	0.234	Poor Passes 2 of 8 condition assessment criteria: - There is less than 10% cover of filamentous algae and or duckweed Lemna spp. (these are signs of eutrophication). - Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.	No encroachment Less than 5% of bank length comprises an engineered bank revetment and there is no encroachment into the channel.	Major/No encroachment Major encroachment on the right bank top due to the development proposals. No encroachment within 5 m of the left bank top.

3.9. OFF-SITE WATERCOURSE CREATION CONDITION ASSESSMENT

A wet ditch has been proposed within the off-site compensation area, which is in the wider ownership boundary. Table 9 shows the details of the target condition assessment and the total length of ditch creation. It has been assumed that there will be no significant delay in the creation of the proposed habitat feature, as such the delay in starting habitat creation has been set to zero. Due to the proximity of the proposed off-site habitat creation to the site, the spatial risk category has been defined as 'compensation inside LPA boundary or NCA of impact site'.



Table 9 Off-Site Watercourse Creation

WATERCOURSE REFERENCE	HABITAT TYPE (UKHAB)	LENGTH (KM)	FINAL CONDITION CLASS	WATERCOURSE ENCROACHMENT	RIPARIAN ENCROACHMENT
Wet Ditch	Ditches	0.048	Moderate Passes 6 of 8 condition assessment criteria: - A range of emergent and floating-leaved plants are present. As a guide >10 species of emergent, floating or submerged plants are present in a 20 m ditch length. - There is less than 10% cover of filamentous algae and or duckweed (<i>Lemna spp.</i>) (these are signs of eutrophication). - Physical damage is evident along less than 5% of the ditch, with examples of damage including: excessive poaching, damage from machinery use or storage, or any other damaging management activities.	No encroachment Less than 5% of bank length comprises an engineered bank revetment and there is no encroachment into the channel.	No encroachment/No encroachment No encroachment within 5 m of both bank tops.



WATERCOURSE REFERENCE	HABITAT TYPE (UKHAB)	LENGTH (KM)	FINAL CONDITION CLASS	WATERCOURSE ENCROACHMENT	RIPARIAN ENCROACHMENT
			 Sufficient water levels are maintained- as a guide a minimum summer depth of approximately 50 cm in minor ditches  Less than 10% of the ditch is heavily shaded.  There is an absence of np-native plant and animal species.		



3.10. STRATEGIC SIGNIFICANCE

The strategic significance for all habitats on site was defined as 'Location ecologically desirable but not in local strategy' as the site is not designated within the Staffordshire Moorlands Council Local Plan (2020), however, the site has ecological value due to its rural location.

3.11. BIODIVERSITY UNIT RESULT

The headline results of the metric show a loss of 2.29 habitat units and 0.13 in watercourse units, with a gain of 3.26 hedgerow units (305.83%), as shown in Table 10. However, other neutral grassland, individual trees, and ditch within an off-site area are proposed to offset the loss, resulting in an overall gain of 0.95 (+10.11%) habitat units and a 0.10 gain in watercourse units (+10.00%) as a result of the works. Table 11 shows the results of the off-site habitat creation and Table 12 shows the headline results of the metric, accounting for the proposed works and associated off-site compensation. The trading rules of the metric have been satisfied in relation to habitat units, as habitats lost have been 'traded up'.

Table 10 On-site Net Change Results

HEADLINE	CATEGORY	RESULT
Total Net Unit Change	Habitat Units	-2.29
	Hedgerow Units	+3.26
	Watercourse Units	-0.13
Total Net % Change	Habitat Units	-24.24%
	Hedgerow Units	+305.83%
	Watercourse Units	-13.00%

Table 11 Off-site Net Change Results

HEADLINE	CATEGORY	RESULT
Total Net Unit Change	Habitat Units	+3.24
	Hedgerow Units	N/A
	Watercourse Units	0.24
Total Net % Change	Habitat Units	+81.89%
	Hedgerow Units	N/A
	Watercourse Units	+100%

Table 12 Headline Results

HEADLINE	CATEGORY	RESULT
Total Net Unit Change	Habitat Units	+0.95
	Hedgerow Units	+3.26
	Watercourse Units	+0.10
Total Net % Change	Habitat Units	+10.11%
	Hedgerow Units	+305.83%
	Watercourse Units	+10.00%

The trading rules of the metric have been satisfied as habitat, hedgerow and watercourse units lost have been 'traded up'.



4. CONCLUSIONS AND RECOMMENDATIONS

The construction of the BESS on-site will result in a loss of 2.29 habitat units and 0.13 in watercourse units, with a gain of 3.26 hedgerow units (305.83%) on-site. Other neutral grassland, individual trees and a ditch will be created within an off-site compensation area south of the site boundary but within the wider ownership boundary. As a result, the scheme will achieve an overall gain of 0.95 habitat units (10.11%), a gain of 0.10 watercourse units (10.00%) and a gain 3.26 hedgerow unit gain (305.83%) with the on-site and off-site compensation. A 10% gain will be achieved as a result in relation to habitat units, hedgerow units and watercourse units, and the trading rules will be satisfied in line with the Environment Act 2021.

The Biodiversity Metric does not take into account for additional species enhancements within the site, and to further increase the site's value for wildlife the following could be provided:

-  Creation of hibernacula (following guidance set out within Froglife, 2001) for common amphibians.
-  Hedgehog houses may be installed to enhance the site for hedgehogs.
-  Bat and bird boxes could be installed on adjacent mature trees.



5. PLANNING APPLICATION INFORMATION

Please provide the pre-development biodiversity value of onsite habitats on the date of calculation.

9.44

Please provide the date the onsite pre-development biodiversity value was calculated:

31/05/2024

If an earlier date, to the date of the planning application, has been used, please provide details why this date has been used:

N/A

When was the version of the biodiversity metric used published?

12/02/2024

Has there been any loss (or degradation) of any onsite habitat(s), resulting from activities carried out before the date the onsite pre-development biodiversity value was calculated. Either:

-  - on or after 30 January 2020 which were not in accordance with a planning permission; or
-  - on or after 25 August 2023 which were in accordance with a planning permission?

No

Does the development site have irreplaceable habitats (corresponding to the descriptions in column 1 of [Schedule to the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations (2023)]) which are:

- i. on land to which the application relates; and
- ii. exist on the date of the application for planning permission, (or an earlier agreed date)

No



6. REFERENCES

- 🌱 DEFRA (2024). The Statutory Biodiversity Metric: User Guide.
- 🌱 DEFRA. (2024). Statutory Biodiversity Metric Condition Assessments.
- 🌱 E3P (2024). Preliminary Ecological Appraisal (report reference: 81-730-R1).
- 🌱 LVIA Ltd (2024) Soft Landscape Proposals (drawing reference: YLEM 1482-11 Rev D).
- 🌱 National Planning Policy Framework (2023). Ministry of Housing, Communities and Local Government.
- 🌱 Staffordshire Moorlands Council (2020) Staffordshire Moorlands Council Local Plan.

END OF REPORT

APPENDIX I

UKHAB HABITAT PLAN



Key:

-  Himalayan balsam
-  Red Line Boundary
-  PRF-M Bat Potential Tree
-  Medium Rural Tree
-  Native hedgerow
-  Ditches
-  Other neutral grassland
-  Ruderal/Ephemeral

Notes

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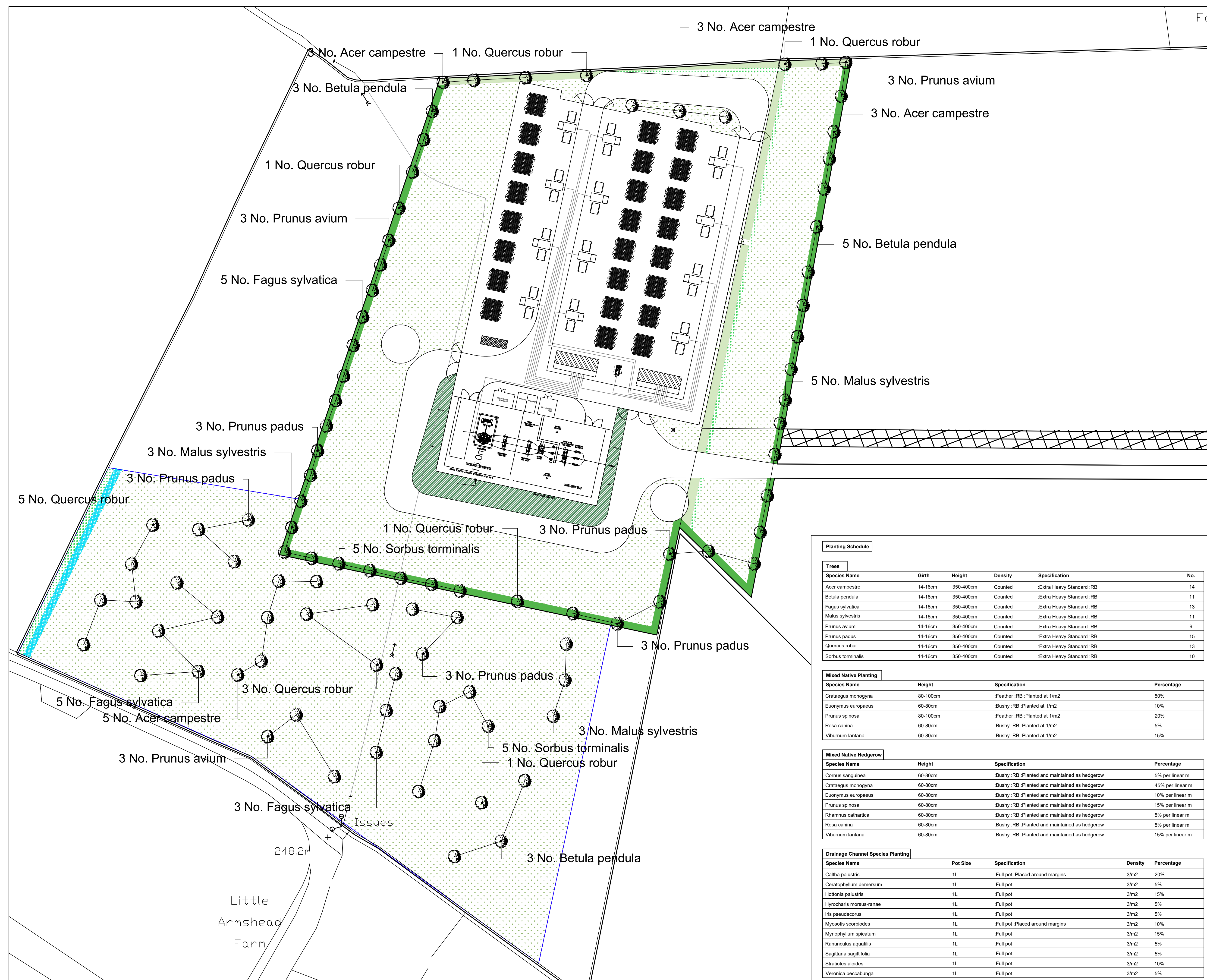


APPENDIX II

SOFT LANDSCAPE

PROPOSALS





Planting Schedule

Trees					
Species Name	Girth	Height	Density	Specification	No.
Acer campestre	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	14
Betula pendula	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	11
Fagus sylvatica	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	13
Malus sylvestris	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	11
Prunus avium	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	9
Prunus padus	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	15
Quercus robur	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	13
Sorbus torminalis	14-16cm	350-400cm	Counted	:Extra Heavy Standard :RB	10

Mixed Native Planting

Species Name	Height	Specification	Percentage
<i>Crataegus monogyna</i>	80-100cm	:Feather :RB :Planted at 1/m2	50%
<i>Eunonymus europaeus</i>	60-80cm	:Bushy :RB :Planted at 1/m2	10%
<i>Prunus spinosa</i>	80-100cm	:Feather :RB :Planted at 1/m2	20%
<i>Rosa carina</i>	60-80cm	:Bushy :RB :Planted at 1/m2	5%
<i>Viburnum lantana</i>	60-80cm	:Bushy :RB :Planted at 1/m2	15%

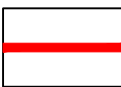
Mixed Native Hedgerow

Species Name	Height	Specification	Percentage
<i>Cornus sanguinea</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	5% per linear m
<i>Crataegus monogyna</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	45% per linear m
<i>Eunonymus europaeus</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	10% per linear m
<i>Prunus spinosa</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	15% per linear m
<i>Rhamnus cathartica</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	5% per linear m
<i>Rosa canina</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	5% per linear m
<i>Viburnum lantana</i>	60-80cm	:Bushy :RB :Planted and maintained as hedgerow	15% per linear m

Drainage Channel Species Planting

Species Name	Pot Size	Specification	Density	Percentage
<i>Caltha palustris</i>	1L	:Full pot :Placed around margins	3/m2	20%
<i>Ceratophyllum demersum</i>	1L	:Full pot	3/m2	5%
<i>Hottonia palustris</i>	1L	:Full pot	3/m2	15%
<i>Hydrocharis morsus-ranae</i>	1L	:Full pot	3/m2	5%
<i>Iris pseudacorus</i>	1L	:Full pot	3/m2	5%
<i>Myosotis scorpiodes</i>	1L	:Full pot :Placed around margins	3/m2	10%
<i>Myriophyllum spicatum</i>	1L	:Full pot	3/m2	15%
<i>Ranunculus aquatilis</i>	1L	:Full pot	3/m2	5%
<i>Sagittaria sagittifolia</i>	1L	:Full pot	3/m2	5%
<i>Stratiotes aloides</i>	1L	:Full pot	3/m2	10%
<i>Veronica beccabunga</i>	1L	:Full pot	3/m2	5%

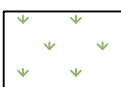
Legend



Site Boundary



Proposed tree planting



Proposed areas to be seeded with WFG4
Neutral Soils seed mix as supplied by
Germinal or similar and sown as directed



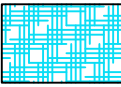
Proposed mixed native planting. Species to be planted in groups of 5-7 at percentages specified. All whips to be staked and tied with expandable rubber tree ties and covered with 60cm tall Spiral tree guards



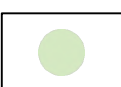
Proposed mixed native species hedgerow planting to be planted in a staggered rows at 500mm centres at percentages specified



Proposed areas to be seeded with WFG9
Wetland and Pond Areas seed mix as
supplied by Germinal or similar and sown
as directed

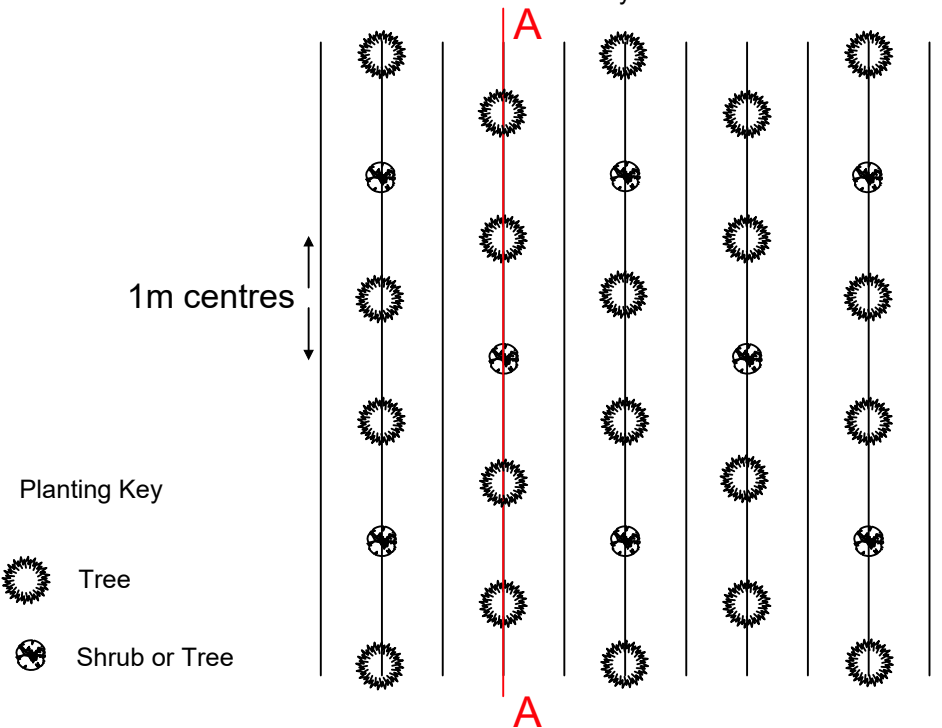


Proposed drainage channel areas to be planted in line with best horticultural practice in percentages specified

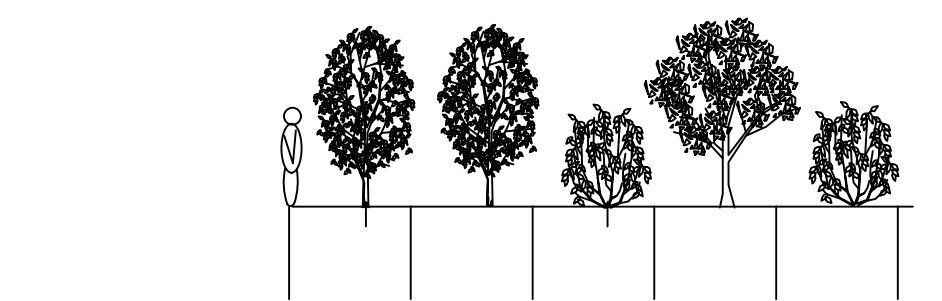


Existing trees and vegetation within the site boundary to be retained and protected during construction and enhanced with tree planting.

Planting matrix 1 (not to scale): Native Planting Mix
5m section demonstrating staggered planting pattern at 1m centres
with native trees and shrub understorey



Section A-A (in matrix) with approximate growth after 5 years



NOTES:
Do not scale from drawing
Not for construction, for planning purposes only



SPECIFICATION
All works are to comply with the written Soft Landscape Specification

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	11.12.24	Layout changes	JPF
Rev	Date	Details	Drawn



Scheme: Luzlow, Bagnall

Client: YLEM Energy Ltd

Drawing: Soft Landscape Proposals

Drawing no: YLEM1482-11

Date: June 2024

Scale: 1:500@A1

Drawn: JPF

Checked: JPF

APPENDIX III

POST DEVELOPMENT PLAN



Key:

-  Red Line Boundary
-  Proposed individual tree
-  Proposed species-rich native hedgerow with trees
-  Retained native hedgerow (Access gaps added)
-  Enhanced hedgerow (native hedgerow to species-rich native hedgerow with trees)
-  Created Ditches
-  Existing Ditches
-  Developed land; sealed surface
-  Mixed scrub
-  Other neutral grassland

Notes

Issue: 1	Revision: 2	Date: 16/12/2024	Drawn: NS2	Authorised: HM
Client: YLEM Energy			Job No. 81-730	Date: 16/12/2024
			Drawing No. 81-730-006	Scale: 1:2100@A4
Job title: Luzlow BESS, Stoke on Trent			Drawing title: UKHab Post Development Plan	



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APPENDIX IV CURRENT AND PROPOSED HEDGEROW CONDITION ASSESSMENTS



ATTRIBUTES AND FUNCTIONAL GROUPINGS (A, B, C, D & E)		CRITERIA (THE MINIMUM REQUIREMENTS FOR 'FAVOURABLE CONDITION'	DESCRIPTION	CONDITION ACHIEVED (Y/N)		
				HEDGEROW 1	HEDGEROW 2	PROPOSED HEDGEROW
A1.	Height	>1.5 m average along length	The average height of woody growth estimated from base of stem to the top of shoots, excluding any bank beneath the hedgerow, any gaps or isolated trees. Newly laid or coppiced hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice). A newly planted hedgerow does not pass this criterion (unless it is > 1.5 m height).	Y	Y	Y
A2.	Width	>1.5 m average along length	The average width of woody growth estimated at the widest point of the canopy, excluding gaps and isolated trees. Outgrowths (e.g. blackthorn suckers) are only included in the width estimate when they >0.5 m in height. Laid, coppiced, cut and newly planted hedgerows are indicative of good management and pass this criterion for up to a maximum of four years (if undertaken according to good practice).	N	N	N
B1.	Gap - hedge base	Gap between ground and base of canopy <0.5 m for >90% of length (unless 'line of trees')	This is the vertical gappiness of the woody component of the hedgerow, and its distance from the ground to the lowest leafy growth. Certain exceptions to this criterion are acceptable (see page 65 of the Hedgerow Survey Handbook).	Y	Y	Y

ATTRIBUTES AND FUNCTIONAL GROUPINGS (A, B, C, D & E)		CRITERIA (THE MINIMUM REQUIREMENTS FOR 'FAVOURABLE CONDITION'	DESCRIPTION	CONDITION ACHIEVED (Y/N)		
				HEDGEROW 1	HEDGEROW 2	PROPOSED HEDGEROW
B2.	Gap - hedge canopy continuity	Gaps make up <10% of total length and No canopy gaps >5 m	This is the horizontal gappiness of the woody component of the hedgerow. Gaps are complete breaks in the woody canopy (no matter how small). Access points and gates contribute to the overall gappiness, but are not subject to the >5 m criterion (as this is the typical size of a gate).	N	N	N
C1.	Undisturbed ground and perennial vegetation	>1 m width of undisturbed ground with perennial herbaceous vegetation for >90% of length: - measured from outer edge of hedgerow, and - is present on one side of the hedge (at least)	This is the level of disturbance (excluding wildlife disturbance) at the base of the hedge. Undisturbed ground should be present for at least 90% of the hedgerow length, greater than 1m in width and must be present along at least one side of the hedge. This criterion recognises the value of the hedge base as a boundary habitat with the capacity to support a wide range of species. Cultivation, heavily trodden footpaths, poached ground etc. can limit available habitat niches.	N	N	N
C2.	Undesirable perennial vegetation	Plant species indicative of nutrient enrichment of soils dominate <20% cover of the area of undisturbed ground	The indicator species used are nettles (<i>Urtica spp.</i>), cleavers (<i>Galium aparine</i>) and docks (<i>Rumex spp.</i>). Their presence, either singly or together, should not exceed the 20% cover threshold.	Y	Y	Y

ATTRIBUTES AND FUNCTIONAL GROUPINGS (A, B, C, D & E)		CRITERIA (THE MINIMUM REQUIREMENTS FOR 'FAVOURABLE CONDITION'	DESCRIPTION	CONDITION ACHIEVED (Y/N)		
				HEDGEROW 1	HEDGEROW 2	PROPOSED HEDGEROW
D1.	Invasive and neophyte species	>90% of the hedgerow and undisturbed ground is free of invasive non-native and neophyte species	Neophytes are plants that have naturalised in the UK since AD 1500. For information on neophytes see the JNCC website and for information on invasive non-native species see the GB Non-Native Secretariat website.	Y	Y	Y
D2.	Current damage	>90% of the hedgerow or undisturbed ground is free of damage caused by human activities	This criterion addresses damaging activities that may have led to or lead to deterioration in other attributes. This could include evidence of pollution, piles of manure or rubble, or inappropriate management practices (e.g. excessive hedge cutting).	Y	Y	Y

CATEGORY	CATEGORY REQUIREMENTS
GOOD	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 <u>Does not fail both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and C2 = Moderate condition).
POOR	Fails a total of more than 4 attributes; OR <u>Fails both attributes</u> in more than one functional group (e.g. fails attributes A1, A2, B1 and B2 = Poor condition).