

Visual Impact Provision (VIP)

Peak District (East) Project

Banks Renewables Crow Edge Site Outline Habitat Management Plan

National Grid

April 2020

Quality information

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Revision History

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1. Introduction

1.1.1. AECOM Ltd was commissioned by National Grid to produce an Outline Habitat Management Plan (OHMP) for a site at Crow Edge in the parish of Dunford Bridge, South Yorkshire. This forms part of the supporting documents to demonstrate how the commitment to at least a 10% biodiversity net gain is being achieved and delivered for the Peak District (East) Visual Impact Provision (VIP) Project (herein terms as the Proposed Project) as detailed in Chapter 2 of the Environmental Assessment Report (EAR).

1.1.2. It is UK Government policy that planning decisions should minimise impacts on and provide net gain for biodiversity (National Planning Policy Framework 2019). The Local Plan for Barnsley[1] states that one of its objectives is to protect and enhance Barnsley's environmental assets and achieve net gains in biodiversity. It also states that Barnsley Council will seek to protect, maintain, enhance and create, an integrated network of connected and multi-functional Green Infrastructure assets.

1.1.3. The Environment Bill, published by the UK Government in October 2019[2] and reintroduced into parliament (January 2020), includes proposals to make Biodiversity Net Gain a mandatory requirement within the planning system in England. Once enshrined in law it will require all developments[3] to achieve a minimum of 10% net gain in biodiversity units relative to the site's baseline biodiversity.

1.1.4. This OHMP provides the level of detail required to provide the necessary assurances on how the offsite biodiversity net gain calculations detailed in the accompanying Visual Impact Provision – Peak East Update on Metric 2.0 Biodiversity Net gain Assessment will be achieved. At this point it does not include full prescriptive details. These details would follow in a Detailed Habitat Management Plan to be produced following the grant of planning permission for the Proposed Project.

1.1.5. The location and details of the proposed Crow Edge Enhancement Site (herein termed as the Site), are provided in Section 2, current habitats and their condition outlined in Section 3, principles for habitat management set out in Section 4, future habitats and their condition outlined in Section 5, year based actions presented in Section 5 and monitoring and reporting summarised in Section 6. A UK Habitat Classification Map is included as Appendix A and a detailed Habitat Description and Condition Assessment Table presented as Appendix B. A representative set of photographs of the Site are included in Appendix C.

[1] Barnsley Local Plan (January 2019)
[2] Environment Bill (2019). The House of Commons, 15 October 2019.
[3] All development within the scope of the Town & Country Planning Act

2. Site Location and Details

2.1.1. The Site (as shown on Appendix A) comprises 13.52 hectares of unenclosed upland to the south east of the Banks Renewables Hazelwood Wind Farm at Crow Edge, near Sheffield. The Site is located approximately 1.5km north east of the Proposed Project and lies between the A616 to the north east and the B106 (Bents Road) at the south; being accessible by a single public footpath from either road. The Site is located within the Dunford Parish, within Barnsley Metropolitan Borough, South Yorkshire.

2.1.2. The Site is characterised by flat topography on higher ground in the north, near the operational boundary of the Hazelwood Wind Farm; with land sloping down towards enclosed agricultural pasture in the surrounding lowland farmed landscape to the south.

2.1.3. The elevation of the site ranges from 314m at the road to the south to 331m at the northern boundary. The central grid reference is SE18565 04150. The Site is entirely owned by Banks Renewables.

3. Current Habitats and Condition

3.1.1. Current habitats have been mapped and are shown on the UK Habitat Classification Map at Appendix A.

3.1.2. In summary, the 13.52ha of habitats present on Site comprise:

- 10.04ha of heathland and acid grassland mosaic;
- 3.17ha of young conifer dominated mixed woodland;
- 0.28ha of mixed, young self-seeded birch (Betula spp.) woodland; and
- A small 0.03ha pond surrounded by soft rush (Juncus effuses).

3.1.3. These habitats have been separated in eight habitat units (HU). The condition of the habitats in each HU is described in detail in Appendix B. Photographs illustrating the current condition of habitats on Site are shown in Appendix C.

3.1.4. Most of the Site supports Priority Habitat upland heathland dominated by heather (Calluna vulgaris) of moderate age; and acid grassland communities dominated either by wavy hair grass (Deschampsia flexuosa) or mat grass (Nardus stricta). There is a small area of recently self-seeded birch woodland at the south-eastern boundary of the Site. A larger area of mixed woodland occupies most of the north east part of the site. This woodland would appear to have originated from planting and is dominated by non-native conifer; with a smaller component of native broadleaved species, principally birch and alder (Alnus glutinosa).

3.1.5. The condition of heathland and acid grassland mosaic habitat on the Site has been assessed against the Defra Metric 2.0 Condition Assessment Guidance for Heathland Habitats with results detailed in Appendix B. The majority of heathland mosaic habitat has been assessed as currently being in Moderate condition; meeting criteria for cover of dwarf shrubs and supporting heather which does not show signs of detrimental management practices such as cutting and burning of sensitive areas, or over-grazing of heather shoots.

3.1.6. The principal threat to the heathland mosaic habitat on Site has been identified as the current encroachment by self-seeding conifer and birch trees as well as the presence of the non-native invasive species rhododendron; which, without management, are expected to increase; further shading out and suppressing dwarf shrub and acid grassland species in the course of succession to woodland and invasive scrub. A small area of heathland at the eastern boundary has been assessed as currently being in Poor condition, due to the particularly high cover of self-seeded trees and scrub encroaching from the nearby woodland.

3.1.7. The Site appears to be currently unmanaged apart from essential health and safety works and, in addition to a public footpath, is crossed by several unofficial un-made footpaths used by the public for exercise and dog walking. The public footpath appears to easily become water-logged in places, resulting in its widening through the adjacent heathland and grassland vegetation, potentially resulting in trampling damage to dwarf shrub species.

3.1.8. The condition of woodland habitats on the Site has been assessed against the Defra Metric 2.0 Condition Assessment Guidance for Woodland Habitats with results detailed in Appendix B. The condition of both areas of woodland has currently been assessed as Fairly Poor; the small area of self-seeded birch being very recently established and lacking in species, structural and age diversity; and the much larger area of mixed woodland being dominated by non-native conifer species of similar age.

4. Principles for Habitat Management

4.1.1. The primary focus of management is to achieve an improvement in condition of each of the eight HUs on Site, with the exception of the small pond which is a non-priority habitat.

4.1.2. The principles underpinning this OHMP are as follows;

- To promote appropriate management of habitats on Site appropriate to the setting in South Yorkshire;
- To preserve and enhance the existing habitats on Site of wildlife value for a prescribed period of time;
- To remove invasive non-native species;
- To avoid introducing or encouraging species that are inappropriate in the South Yorkshire context; and
- To achieve a biodiversity net gain for the Peak District (East) VIP Project in excess of 10%.

4.1.3. The level of improvement to be achieved though implementation of this management plan is summarised in Table 1 below.

Table 1: Site at Crow Edge – Current and Target Habitat Condition for each Habitat Unit (HU)

Plot ID (AECOM)	Area (ha)	UK Habitat Classification	Current Habitat Condition	Target Habitat Condition
HU1&2	5.141083	Heathland and scrub – Upland heathland	Moderate	Good
HU3	0.283935	Woodland and forest - Other lowland mixed deciduous woodland	Fairly Poor	Fairly Good
HU4	3.171496	Woodland and forest – other woodland; mixed	Fairly Poor	Fairly Good
HU5	0.155682	Heathland and scrub – Upland heathland	Moderate	Good
HU6	0.283701	Heathland and scrub – Upland heathland	Poor	Moderate
HU7	0.170531	Heathland and scrub – Upland heathland	Moderate	Good
HU8	4.291428	Heathland and scrub – Upland heathland	Moderate	Good
HU1a	0.029227	Pond (non-priority habitat)	Moderate	Moderate
Total Area	13.527083			

Heathland

4.1.4. One of the condition assessment criteria in the Defra Metric 2.0 Condition Assessment Guidance for Heathland Habitats is that a range of age classes of heather is indicative of good condition; with cover of young (pioneer stage) heather between 10% and 15% and cover of old (late mature/degenerate stages) between 10% and 30%.

4.1.5. Although all age classes of heather are present on Site; most of the heather is currently of moderate age, with pioneer and degenerate stages each representing less than 10% of heather cover overall.

4.1.6. Whilst, over time, natural succession without grazing or other management pressure is likely to increase the diversity of heather age range; as the currently moderate-aged plants reach late-mature and degenerate stages of growth and current pioneer stage heather reaches maturity; without management, the opportunity for pioneer heather to establish is likely to be impeded by encroaching self-seeded trees and scrub.

4.1.7. Removal of scrub, self-seeded trees and invasive species will halt succession to woodland and scrub and provide gaps in the heather canopy allowing new pioneer growth of heather. Additional small areas of turf-stripping in acidic grassland areas around more isolated patches of dwarf shrubs will also provide opportunities for the spread of pioneer heather growth via seed from existing heather plants on Site. Although dwarf shrub species such as bilberry (Vaccinium myrtillus) and crowberry (Empetrum nigrum) are present on Site in addition to heather – they are at much lower cover levels. The introduction of Site or other locally sourced seed/propagules of these species to parts of the Site with lower dwarf shrub species diversity, notably where trees are removed, would provide opportunity to increase the diversity of heathland vegetation species composition overall.

Woodland

4.1.8. Progressive thinning of the similar-aged dominant non-native conifer woodland canopy will create gaps in the woodland canopy and allow establishment of young native tree and shrub species, including by natural regeneration; diversifying the species composition, age and structure of the woodland. This will be supplemented by limited planting of native, deciduous tree and shrub species local to the area and appropriate to the site conditions.

4.1.9. Allowing standing and fallen deadwood to remain within the woodland will enhance the woodland habitat value over time for species groups including invertebrates, birds and bats.

4.1.10. The small area of self-seeded birch woodland is currently unmanaged. Thinning of the birch canopy as it matures over time will encourage natural regeneration and the development of a more diverse age and height structure of the woodland. Allowing standing and fallen deadwood to remain within the woodland will enhance the biodiversity value of the woodland as it develops.

4.1.11. Diversification of native broadleaved species composition could be achieved through additional introduction of seeds or saplings of other locally native species on Site such as oak (Quercus spp.) in drier areas and alder and willow (Salix spp.) in wetter areas. Where opportunities arise, seedlings of suitable broadleaved species removed from heathland areas as part of the heathland management would also be replanted in suitable locations in the retained areas of woodland. The precise mix of species and number of trees to be planted will be determined ahead of the first year of woodland management and be kept under review during the timeframe covered by this OHMP.

5. Future Habitats and Condition

Heathland

5.1.1. The aims of habitat management and target condition for each heathland habitat parcel are described in detail in Appendix B. The overall aim is to enhance the majority of heathland on Site from Moderate to Good Condition through:

- Removal of the invasive non-native Rhododendron ponticum and self-seeded pine and birch with regular follow-up to prevent encroachment of these species and succession of heath to birch/pine woodland and consequential shading out heather;
- Providing gaps in the heather canopy through removal of invasive scrub and self-seeded conifers; and through turf-stripping of localised areas of dense acidic grassland around existing heather plants; allowing new pioneer growth of heather and establishment of other dwarf shrubs with the aim of achieving greater age and species diversity of heathland vegetation communities on Site;
- Spreading of propagules/seed gathered from existing plants of bilberry and crowberry into areas of heathland where these dwarf shrubs are of lower abundance; and
- Rationalising the footpath network.

5.1.2. The aim of these interventions is to maintain at least 50% cover of dwarf shrubs (with bilberry/crowberry becoming more frequent in addition to heather) and to achieve a varied range of age classes of heather. Overall cover of trees and scrub will be maintained well below 15%; with undesirable species pine and birch below 5%, and non-native invasive species, rhododendron, appropriately controlled.

5.1.3. Rhododendron is a long-lived, evergreen, woody shrub which spreads via seeds and stem layering. Plants of this species produce seeds at age 10 years or more, usually 12 to 20 years (regrowth from mature cut stumps can produce seeds after two years). The seed bank can persist for up to three years; however, seeds rarely remain viable for more than one year (particularly in wetter soil). Once populations become well established and mature, control can become extremely difficult.

5.1.4. Manual removal by pulling out young shoots, digging out using hand tools and cutting back will be deployed on smaller stands of rhododendron. As much of the root system as possible will be removed; however, only root stock close to the surface, near the main shoot, will regrow. If no seeds are present, removed plants will be chipped onsite or removed from site as green waste. If seeds are present, removed material will be taken off site by a suitably licenced carrier and disposed of as green waste (for incineration) or taken to a landfill suitably licenced to receive contaminated waste.

5.1.5. Collectively, these measures will contribute to enhancement of those areas of the heathland currently assessed as Poor to Moderate Condition and those areas of the heathland currently assessed as Moderate to Good Condition over the 15-year time to target Condition for this habitat type.

Woodland

5.1.6. The aims of habitat management and target condition for each woodland parcel are described in detail in Appendix B. The overall aim is to enhance the majority of woodland on Site from Fairly poor to Fairly Good Condition through:

- Thinning of the self-seeded birch woodland canopy to encourage natural regeneration and the development of a more diverse age and height structure of the woodland;
- Control of invasive non-native Rhododendron ponticum to enhance species composition of the areas of woodland;
- Diversification of native broadleaved species composition through additional introduction of seeds or saplings of appropriate native species such as oak, with alder and willow on lower, wetter parts of the Site;

- Thinning of the similar-aged dominant non-native conifer woodland canopy through to create gaps in the canopy to allow establishment of young native tree and shrub species, diversifying the age and structure of the woodland;
- Opportunities will be taken where seedlings of suitable broadleaved species are removed from heathland areas to replant these in suitable locations within the retained areas of woodland; and
- Standing and fallen deadwood to be left in situ.

5.1.7. As on the heathland area, manual removal by pulling out young shoots, digging out using hand tools and cutting back will be deployed on smaller stands of rhododendron. As much of the root system as possible will be removed; however, only root stock close to the surface, near the main shoot, will regrow. If no seeds are present, removed plants will be chipped onsite or removed from site as green waste. If seeds are present, removed material will be taken off site by a suitably licenced carrier and disposed of as green waste (for incineration) or taken to a landfill suitably licenced to receive contaminated waste.

5.1.8. Collectively, these measures will contribute to enhancement of the two areas of woodland currently assessed as Fairly Poor to Fairly Good Condition over the 25-year time to target Condition for this habitat type.

6. Year Based Actions

6.1.1. Habitat management measures designed to enhance the condition of heathland and woodland habitats on site are detailed in Appendix B.

6.1.2. The proposed habitat management measures and timescales for each habitat parcel (shown on the Plan at Appendix A) are set out in Table 2 (Heathland Habitat Units) and Table 3 (Woodland Habitat Units) below.

Table 2: Heathland Management Measures over Time to Target for each Habitat Unit (HU)

Habitat Map Unit Reference	Condition Change Aim	Time to Target	Year 1	Year 5	Year 10	Year 15
HU1, HU2, HU5, HU7 and HU8	Moderate to Good	15 years	A series of pre-management representative photographs will be taken of habitats on site from fixed points	Fixed point photographs to be repeated	Fixed point photographs to be repeated	Fixed point photographs to be repeated
HU6	Poor to Moderate		Removal of Rhododendron ponticum and self-seeded pine and birch	Follow-up removal of Rhododendron ponticum and self-seeded pine and birch	Follow-up removal Rhododendron ponticum and self-seeded pine and birch	Follow-up removal of Rhododendron ponticum and self-seeded pine and birch
			Turf-stripping of small areas dominated by dense acidic grassland around more isolated patches of heather and bilberry	Turf-stripping of small areas dominated by dense acidic grassland around more isolated patches of heather and bilberry.		
			Spreading of propagules/seed of bilberry and crowberry gathered from Site or other local source into areas of heathland on Site where these dwarf shrubs are of lower abundance	Spreading of propagules/seed of bilberry and crowberry gathered from Site or other local source into areas of heathland on Site where these dwarf shrubs are of lower abundance	Spreading of propagules/seed of bilberry and crowberry gathered from Site or other local source into areas of heathland on Site where these dwarf shrubs are of lower abundance	
			Creation of a well-defined footpath network	Carry out any remedial works required to maintain the public access route	Carry out any remedial works required to maintain the public access route	Carry out any remedial works required to maintain the public access route

Table 3: Woodland Management Measures over Time to Target for each Habitat Unit (HU)

Habitat Map Unit Reference	Condition Change Aim	Time to Target	Year 1	Year 5	Year 10	Year 15	**Year 20**	**Year 25**
HU3	Fairly Poor to Fairly Good	25 years	Pre-management photographs of habitats on site from fixed points Canopy thinning (15%); leaving some brash piles from thinning in the woodland Rhododendron control Planting broadleaved native saplings and seeds (oak and alder or willow in wetter areas)	Fixed point photographs to be repeated Canopy thinning (10%); leaving some brash piles from thinning in the woodland Follow-up control of Rhododendron	Fixed point photographs to be repeated Canopy thinning (5%); leaving some brash piles from thinning in the woodland Follow-up removal of Rhododendron	Fixed point photographs to be repeated Follow-up control of Rhododendron Planting broadleaved native saplings and seeds (oak and alder or willow in wetter areas)	Fixed point photographs to be repeated Follow-up control of Rhododendron	Fixed point photographs to be repeated Follow-up control of Rhododendron
HU4	Fairly Poor to Fairly Good	25 years	Canopy thinning of (20%) of non-native pine – prioritising areas where trees are shading heather, leaving some brash piles from thinning in the woodland Check for and control encroachment of Rhododendron Planting of native broadleaved tree species such as oak, alder, hazel, blackthorn and hawthorn	Check for and control encroachment of Rhododendron	Canopy thinning of (10%) of non-native pine – prioritising areas where trees are shading heather, leaving some brash piles from thinning in the woodland Check for and control encroachment of Rhododendron	Check for and remove any encroachment of Rhododendron Planting of native broadleaved tree species such as oak, alder, hazel, blackthorn and hawthorn	Canopy thinning of (10%) of non-native pine – prioritising areas where trees are shading heather, leaving some brash piles from thinning in the woodland Check for and remove any encroachment of Rhododendron	Check for and remove any encroachment of Rhododendron

7. Monitoring and Reporting

7.1.1. Ecological monitoring and reporting is required to determine the success of the management measures specified for target habitats, as well as to identify whether any adaptions are necessary to ensure the required change ion condition is achieved.

7.1.2. Monitoring surveys of the target habitat areas will be undertaken between June and August both ahead and following the completion of planned management actions. These monitoring surveys (years 4&5, 9&10, 14&15, 19&20 and 24&25) will be undertaken to:

- Assess the condition of the target habitats against the baseline habitat condition;
- Identify any necessary adaptations to the habitat management prescriptions to deliver the future habitat conditions required (years, 4, 9, 14, 19 and 24);
- Identify where regrowth of rhododendron requires further control (years, 4, 9, 14, 19 and 24); and
- Confirm the management works undertaken (years, 5, 10, 15 and 20).

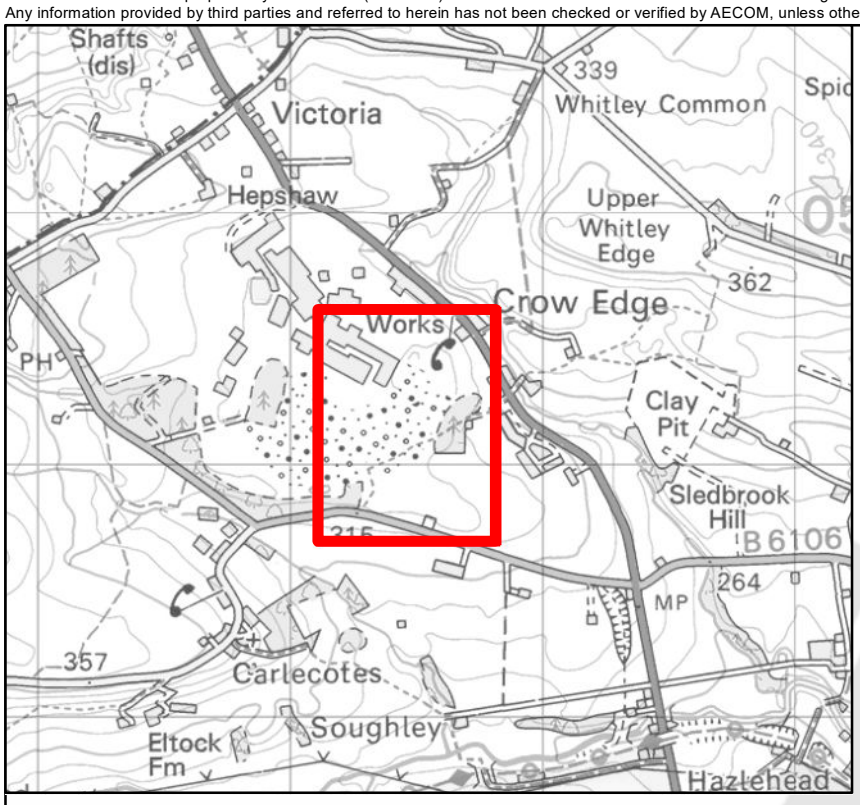
7.1.3. A final Inspection visit (year 15 for heathland and year 25 for woodland) will comprise a full walkover survey of the target habitat areas to:

- Determine the actual future habitat condition; and
- Identify any further management actions required.

7.1.4. Reporting after each monitoring survey and final inspection will include reference to habitat management works needed or undertaken (relating to the target habitat areas). This information to be provided to Banks Renewables and Barnsley Metropolitan Borough Council.

Appendix A Site Location and UK Habitat Classification Map

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LEGEND

- Survey Boundary

UK Habitat Classification

- Pond (Non-Priority Habitat)
- Woodland & Forest - Other Woodland Mixed; Mainly Conifer
- Woodland & Forest - Other Lowland Mixed Decidious Woodland
- Upland Heath

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Client: nationalgrid

Project: VISUAL IMPACT PROVISION PEAK DISTRICT EAST

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Scale at A3: 1:2,500	
Drawing No: APPENDIX A	

Appendix B Habitat Description and Condition Assessment

Appendix B1: Baseline Habitat Condition Assessment Rationale – Habitat Units HU1-HU8

Habitat type	Habitat condition assessment	Survey data reference	Habitat condition sheet	Assessment	Assigned condition
Heathland and scrub – Upland heathland Map reference parcel HU1 & HU2 (just outside enclosed agricultural land: quarry land adjacent shown at 331m contour on map)	Upland heathland and acid grassland mosaic. Heathland component dominated by Calluna vulgaris (D); with bilberry (Vaccinium myrtillus) (O), crowberry (Empetrum nigrum) (R), pleuropcarpous moss (LA), Deschampsia flexuosa (O), Festuca ovina (O), Carex sp. (R) and Cladonia lichens (O). Acid grassland: frequent grass species - Nardus stricta, Holcus lanatus and D. flexuosa with Juncus squarrosus (R) and infrequent patches of Calluna vulgaris and Vaccinium myrtillus. Infrequent forbs: Rumex acetosa, Galium saxatile, Potentilla erecta, Digitalis purpureaus, Cirsium palustre. Mosses Polytrichum sp. and Rhytidiadelphus squarrosus also noted. On slightly lower ground, a strip of vegetation becomes dominated by Juncus effusus in waterlogged ground conditions with some standing water. At the edge of the Juncus effusus vegetation, a green Sphagnum sp. (LA) was recorded together with Eriophorum angustifolium (LA) and Molinia caerulea (O) in a small area. Cover of dwarf shrubs over the whole habitat parcel estimated at approximately 50% (mainly Calluna vulgaris). All age classes of heather are present, although % cover requirements for degenerate and pioneer stages are not met. No grazing of heather shoots noted. No signs of cutting or burning of sensitive areas; or physical damage (except for some potential damage to vegetation through recreational use - widening of waterlogged public access path along the northern boundary of this habitat parcel). Overall cover of undesirable species rhododendron, Digitalis purpureus, bramble, pine and birch in this habitat parcel is estimated at approximately 11%.	18th March 2020 - Condition Assessment	Heathland Habitat Types	Professional judgement	Moderate – Meets criteria 1 for dwarf shrub cover; (although note additional dwarf shrubs not at required frequency) and fails 3 other criteria (2, 5 & 7).
Woodland and forest - Other lowland mixed deciduous woodland (includes woodland self-sown or recently established in either urban or rural situations)	A small area of young birch woodland (with mainly complete canopy cover) over acid grassland ground vegetation has the appearance of self-seeding. Native species dominant. Less than 3 different native trees and 3 shrub species in an average 10m radius. On sloping boggy ground with some standing water in lower part. Natural drainage occurring through the woodland. Little variation in woodland age or height structure. No deadwood noted. No damage noted. No grazing damage, inappropriate management or agricultural operations noted	18th March 2020 - Condition Assessment	Woodland Broad Habitat Type	Professional judgement	Fairly Poor – A small recently self-seeded area dominated by birch; currently unmanaged. Does not meet criteria 3, 6 or 12.

Habitat type	Habitat condition assessment	Survey data reference	Habitat condition sheet	Assessment	Assigned condition
Map reference parcel HU3	or signs of significant nutrient enrichment. Rhododendron noted at <5%.				
Woodland and forest – other woodland; mixed Map reference parcel HU4	Woodland with complete canopy cover is dominated by non-native conifer (Pinus spp.) with some birch (Betula sp.) larch (Larix europeaus) and alder (Alnus glutinosa). Non-native trees of a similar age are the dominant component, although some pine and birch regeneration also present. Less than 3 different native trees and 3 shrub species in an average 10m radius. Limited variation in woodland age or height structure. Limited deadwood noted. No grazing damage, drainage channels or inappropriate management/agricultural operations noted or signs of significant nutrient enrichment.	18th & 31st March 2020 - Condition Assessment	Woodland Broad Habitat Type	Professional judgement	Fairly Poor – Fails criteria 2, 3 and 12. Non-native conifer species of similar age dominant
Heathland and scrub – Upland heathland Map reference parcel HU5	Heathland dominated by Calluna vulgaris of mostly moderate age with some pioneer stage of growth. Cover of dwarf shrubs over 50%. No signs of burning/cutting and no obvious evidence of grazed heather shoots noted, although physical damage has occurred as a result of the public footpath. Cover of trees/scrub <15%. Undesirable species including self-seeded pine and broom (Cytisus scoparius) <5%.	18th March 2020 - Condition Assessment	Heathland Habitat Types	Professional judgement	Moderate – Meets criteria 1 (although note additional dwarf shrubs not at required frequency) but does not meet condition criteria 2 and 7.
Heathland and scrub – Upland heathland Map reference parcel HU6	Heathland dominated by Calluna vulgaris of mostly moderate age with some pioneer stage of growth. No grazing, burning or cutting damage noted. Cover of trees/scrub >15%. Undesirable species including self-seeded pine, birch and broom (Cytisus scoparius) estimated at >15% cover. An un-made recreational path is potentially impacting on vegetation.	18th & 31st March 2020 - Condition Assessment	Heathland Habitat Types	Professional judgement	Poor – Meets criterion 1 (although note additional dwarf shrubs not at required frequency) but does not meet criteria 2, 5, 6 and 7.
Heathland and scrub – Upland heathland Map reference parcel HU7	Heath vegetation occupying small glades within the footprint of HU4 woodland. All growth stages of heather are present, but neither the pioneer or degenerate stage exceeds 10% cover. >75% cover of Calluna vulgaris within the open glade areas. No other dwarf shrub species noted. No signs of burning or cutting or of grazing or physical damage. Although the cover of undesirable species is under 5% in the central glade areas the heath areas are surrounded by pine and other woody species which are encroaching on heath vegetation and some heather persists beneath woodland edge; therefore estimated cover of undesirable species affecting this heathland area is >5% overall.	31st March 2020 - Condition Assessment	Heathland Habitat Types	Professional judgement	Moderate – Meets criterion 1 (although note additional dwarf shrubs not recorded) but does not meet criteria 2 and 5

Habitat type	Habitat condition assessment	Survey data reference	Habitat condition sheet	Assessment	Assigned condition
Heathland and scrub – Upland heathland Map reference parcel HU8	Upland heathland and acid grassland mosaic. Heathland component dominated by Calluna vulgaris with crowberry (Empetrum nigrum) (R), and bilberry (Vaccinium myrtillus) (R). Mainly moderate-aged heather with occasional degenerate stage of growth in the northern corner. Pine saplings frequent and birch occasional. Rhododendron (R). Acid grassland in the northern part of this parcel: D. flexuosa (A), D. cespitosa (O), Juncus effusus (O-LA). Mosses (F), Holcus lanatus (F) with occasional patches of heather. Unmanaged with some signs of rabbit grazing. Rhododendron (R). Bramble (LA). Acid grassland in the south of this parcel: a sparse short rabbit-grazed acidic grassland vegetation interspersed with bare ground and patches of acrocarpous mosses. D. flexuosa dominant. Cladonia lichens (LF), Peltigera lichen (R) and occasional patches of heather. Track compaction. Tree and scrub (pine, birch) encroachment in areas nearest the woodland at HU4. Cover of undesirable species is estimated at >10% across the parcel overall (includes pine, birch, bramble, rhododendron and mats of acrocarpous mosses).	31st March 2020 - Condition Assessment	Heathland Habitat Types	Professional judgement	Moderate – meets Moderate descriptor for dwarf shrub cover – estimated at 45% overall (although note additional dwarf shrubs not quite at required frequency). Meets criteria 3, 4, & 6, but fails on criteria 2, 5 and 7.
Pond (Non-Priority Habitat) Map reference parcel HU1a	Open water with Juncus effusus abundant at margins. Occasional floating vegetation in central part of pond (possibly Glyceria sp) but pond itself not accessed. Salix sp. occasional at margins. Epilobium sp (O). Water quality appears good with clear water and no obvious sign of pollution. There is semi-natural riparian land for 10m buffer at margin. The pond is not dominated by plants. The pond is little shaded. No fish noted. Pond does not appear connected to other waterbodies via a ditch. Invasive non-native species (INNS) absent. Less than 10% algae or duckweed.	18th March 2020 - Condition Assessment	Pond Habitat Type	Professional judgement	Moderate – Meets most criteria but submerged and floating plants are limited

Appendix B2: Post Intervention Habitat Condition Assessment Rationale – Habitat Units HU1-HU8

Habitat type	Habitat measure	Habitat condition assessment	Habitat condition sheet	Assessment	Target condition
Heathland and scrub – Upland heathland Map reference parcel HU1-HU2	Enhanced	Initial removal of INNS Rhododendron ponticum and self-seeded pine and birch with regular follow-up to prevent encroachment of invasive species and succession of heath to birch/pine woodland, shading out heather. Spreading of propagules/seed gathered from existing plants of bilberry and crowberry into areas of heathland where these dwarf shrubs are of lower abundance. Removal of scrub, self-seeded trees and invasive species will provide gaps in the heather canopy allowing new pioneer growth of heather and establishment of other dwarf shrubs bilberry and crowberry; whilst under continuation of current land-use regime the now predominantly moderate-aged stands of heather start to move into the more mature and degenerate stages of growth (followed by some subsequent re-growth of pioneer stage); and current pioneer stages become moderate-aged over the 15-year time to target. Additional small areas of turf-stripping in acidic grassland areas around more isolated patches of dwarf shrubs to provide opportunities for the spread of pioneer heather growth from seed from existing heather plants. The aim of these interventions is to maintain at least 50% cover of dwarf shrubs (with bilberry/crowberry frequent in addition to heather) and to achieve a varied range of age classes of heather. Overall cover of trees and scrub will be maintained well below 15%; with undesirable species pine and birch below 5% and INNS rhododendron appropriately controlled. Potential damage to vegetation adequately controlled through footpath works.	Heathland Habitat Types	Professional judgement	From Moderate to Good (15-year time to target for Enhancement of upland heathland with Distinctiveness unchanged)
Woodland and forest - Other lowland mixed deciduous woodland Map reference parcel HU3	Enhanced	Currently unmanaged woodland. Thinning of the birch canopy as it matures over time will encourage natural regeneration and the development of a more diverse age and height structure of the woodland. Standing and fallen deadwood to be left in situ. Diversification of native broadleaved species composition through additional introduction of seeds or saplings of other native species such as oak with alder and willow (on lower wetter parts of the slope). Removal of INNS Rhododendron.	Woodland Habitat Type	Professional judgement	From Fairly Poor to Fairly Good (25-year time to target for Enhancement of Lowland mixed deciduous woodland with Distinctiveness unchanged)
Woodland and forest – other woodland; mixed Map reference parcel HU4	Enhanced	Thinning and diversification of the similar-aged dominant non-native conifer woodland canopy through planting of native tree species. Aim of intervention to create gaps in the canopy to allow establishment of young native tree and shrub species, diversifying the age and structure of the woodland over the 20-year time to target; achieving a mixed woodland with a high proportion of native broadleaved tree	Woodland Broad Habitat Type	Professional judgement	From Fairly Poor to Fairly Good (25-year time to target condition for enhancement of other woodland; mixed with

Habitat type	Habitat measure	Habitat condition assessment	Habitat condition sheet	Assessment	Target condition
		species; with diversity of age, height structure and woodland species composition. Allow standing and fallen deadwood to remain within the woodland and monitor and remove any future encroachment of INNS Rhododendron.			Distinctiveness unchanged)
Heathland and scrub – Upland heathland Map reference parcel HU5	Enhanced	Initial removal of self-seeded pine and birch with regular follow-up to prevent succession of heath to scrub/birch/pine woodland, shading out heather. Spreading of propagules/seed gathered from existing plants of bilberry and crowberry into areas of heathland where these dwarf shrubs are of lower abundance. Removal of scrub, self-seeded trees and invasive species will provide gaps in the heather canopy allowing new pioneer growth of heather and establishment of other dwarf shrubs bilberry and crowberry; whilst under continuation of current land-use regime the now predominantly moderate-aged stands of heather start to move into the more mature and degenerate stages of growth (followed by some subsequent re-growth of pioneer stage); and current pioneer stages become moderate-aged over the 15-year time to target. The aim of these interventions is to maintain existing levels of cover of dwarf shrubs (with bilberry/crowberry frequent in addition to heather); to achieve a varied range of age classes of heather; with overall cover of trees and scrub maintained well below 15%; with undesirable species pine, broom and birch below 5% and any encroachment of INNS rhododendron appropriately controlled.	Heathland Habitat Types	Professional judgement	From Moderate to Good (15-year time to target for Enhancement of upland heathland with Distinctiveness unchanged)
Heathland and scrub – Upland heathland Map reference parcel HU6	Enhanced	Initial removal of self-seeded pine and birch with regular follow-up to prevent encroachment of invasive species and succession of heath to scrub/birch/pine woodland, shading out heather. Spreading of propagules/seed gathered from existing plants of bilberry and crowberry into areas of heathland where these dwarf shrubs are of low abundance. Removal of scrub, self-seeded trees and invasive species will provide gaps in the heather canopy allowing new pioneer growth of heather and establishment of other dwarf shrubs bilberry and crowberry; whilst under continuation of current land-use regime the now predominantly moderate-aged stands of heather start to move into the more mature and degenerate stages of growth and current pioneer stages become moderate-aged over the 15-year time to target. The aim of these interventions is to maintain existing levels of cover of dwarf shrubs (with bilberry/crowberry frequent in addition to heather); to achieve a varied range of age classes of heather, with overall cover of trees and scrub maintained well below	Heathland Habitat Types	Professional judgement	From Poor to Moderate (15 -year time to target for Enhancement of upland heathland with Distinctiveness unchanged)

Habitat type	Habitat measure	Habitat condition assessment	Habitat condition sheet	Assessment	Target condition
		15%; with undesirable species pine, broom and birch below 5% and any encroachment of INNS rhododendron appropriately controlled.			
Heathland and scrub – Upland heathland Map reference parcel HU7	Enhanced	Initial removal of self-seeded pine with regular follow-up to prevent encroachment and succession of heath to scrub/birch/pine woodland, shading out heather. Removal of scrub and self-seeded trees will provide gaps in the vegetation allowing new pioneer growth of heather; whilst under continuation of current land use regime the now predominantly moderate-aged stands of heather begin to move into the degenerate stages of growth, and current pioneer stages become moderate-aged over the 10-year time to target. The aim of these interventions is to achieve a range of age classes of heather, with overall heather cover 50% or above; with overall cover of trees and scrub maintained well below 15%; with undesirable species pine, broom and birch below 5% and any encroachment of INNS rhododendron appropriately controlled.	Heathland Habitat Types	Professional judgement	From Moderate to Good (15-year time to target for Enhancement of upland heathland with Distinctiveness unchanged)
Heathland and scrub – Upland heathland Map reference parcel HU8	Enhanced	Initial removal of self-seeded pine, rhododendron, bramble and birch; with regular follow-up to prevent encroachment of invasive species and succession of heath to scrub/birch/pine woodland, shading out heather. Spreading of propagules/seed gathered from existing plants of bilberry and crowberry into areas of heathland where these dwarf shrubs are of low abundance. Additional small areas of turf-stripping in acidic grassland areas around more isolated patches of dwarf shrubs to provide opportunities for the spread of pioneer heather growth from seed from existing heather plants. Removal of scrub, self-seeded trees and invasive species will provide gaps in the heather canopy allowing new pioneer growth of heather and establishment of other dwarf shrubs bilberry and crowberry; whilst under continuation of current land-use regime the now predominantly moderate-aged stands of heather start to move into the more mature and degenerate stages of growth (followed by some subsequent re-growth of pioneer stage) over the 15-year time to target. The aim of these interventions is to increase current levels of cover of dwarf shrubs (with bilberry/crowberry frequent in addition to heather); to achieve a varied range of age classes of heather; with overall cover of trees and scrub maintained well below 15%; with undesirable species pine, broom and birch below 5% and any encroachment of INNS rhododendron appropriately controlled.	Heathland Habitat Types	Professional judgement	From Moderate to Good (15-year time to target for Enhancement of upland heathland with Distinctiveness unchanged)

Appendix C Site Photographs



HU1- HU2: Heathland and acid grassland habitat with encroaching Rhododendron



HU1- HU2: Large areas of mainly moderate-aged heather on higher ground with self-seeding pine



Waterlogged public access route running across the Site



HU1-HU2: encroachment of self-seeded pine and Rhododendron

	
HU3: young self-seeded birch woodland with rhododendron encroaching	HU6: Heathland adjacent to conifer-dominated woodland is in Poor condition with high cover of self-seeded trees and scrub
	
HU8: Heathland habitat with encroachment of self-seeded trees from adjacent conifer-dominated woodland	HU8: Heathland and acid grassland habitat with self-seeded trees

	
HU4 & HU7: Heathland persists in glades within conifer-dominated woodland	HU1-HU2 Gaps in heather canopy with bryophytes and lichens