Appendix 7.5 Outline Habitat Management Plan

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Cumberhead West Wind Farm

Outline Habitat Management Plan Technical Appendix 7.5

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1. INTRODUCTION

This Outline Habitat Management Plan (OHMP) describes the proposed habitat enhancement measures for the Cumberhead West Wind Farm (hereafter referred to as the 'Proposed Development'), near Coalburn, South Lanarkshire.

The management recommended within this OHMP follows relevant guidance on habitat management (e.g. SNH, 2016[1]) and is based on the findings of the assessments within Cumberhead West Wind Farm EIA Report, in particular Chapter 7: Ecology, Chapter 8: Ornithology and Chapter 11: Hydrology, Hydrogeology & Geology.

Although the impact assessments predicted no significant effects on habitats or ornithology that would require mitigation, Cumberhead West Wind Farm Ltd ("the Applicant") proposes habitat enhancement measures to increase the quality and extent of upland habitats of conservation value within the site.

The implementation of a final Habitat Management Plan (HMP) would run from the start of construction of the Proposed Development until decommissioning and restoration has been implemented in full, to the satisfaction of the Planning Authority. Although the landowner has been consulted during development of this OHMP further landowner consultation will be required prior to HMP finalisation.

Mitigation of effects during construction and decommissioning phases are dealt with separately in a site Construction Environmental Management Plan (CEMP – see EIA Report Technical Appendix 3.1). Therefore, the scope of the OHMP relates primarily to the operational period, albeit some management measures may commence during the construction period.

The final HMP will be reviewed and updated if necessary, to reflect ground condition surveys undertaken following construction and prior to the date of final commissioning to confirm the HMP as approved remains appropriate and applicable. Any changes to the HMP shall only take effect once agreed with landowner and subsequently approved in writing by NatureScot and the Planning Authority.

1.3 Structure of the OHMP

The structure of the OHMP is set out as follows:

- The site and baseline ecology and ornithology information;
- Management Units;
- Aims, Objectives and Management Prescriptions;
- Monitoring;
- Reporting & HMP Review; and
- HMP Timetable.

[1] Scottish Natural Heritage (2016). Planning for Development: What to consider and include in Habitat Management Plans. Guidance. Version 2.

This document is to remain a 'live' document and should be updated as and when new or updated guidance becomes available, or as a result from ongoing monitoring activities, to ensure the Aims of the HMP are being met.

2. THE SITE & BASELINE CONDITIONS

2.1 Site Description

The Proposed Development site, forming 932ha of the western-most part of Cumberhead Forest, mainly consists of a mixture of mature commercial Sitka spruce plantation, with areas of recent clear-fell and young second rotation crop. Approximately 280ha of harvesting and replanting has taken place in this area of forest between 2008 and 2020.

Cumberhead Forest is held in a single ownership and managed as a commercial forest with felling and replanting delivered in accordance with an approved long-term forest plan, most recently renewed in 2016. Through the forest plan, the forest is being progressively harvested and replanted, focussing on commercial timber production but reflecting modern forestry practices through the introduction of designed open ground and a greater diversity of conifer and native woodland species.

Some areas of open habitat are found within the site, most notably moorland around Nutberry Hill where the site reaches a peak of 522m above sea level, and to the north of the site, north of Birkenhead Burn. Areas of enclosed grazing and marshy grassland are found around Blackhill Farm within the southeast of the site. The River Nethan, and Pockmuir Burn and Birkenhead Burn tributaries flow northeast through the site.

In general, much of the site is characterised by relatively shallow peat under 0.5m depth, with deeper peat typically limited to flatter areas or localised hollows. The results of peat probing in proximity to proposed infrastructure (EIA Report Figure 11.5 (a-d) indicated that there are three more extensive areas of deeper peat >1.0m depth: within the north of the site, north of Birkenhead Burn; in the centre-west of the site, mainly west of proposed T11 and T12 locations; and west of Tod Law, between proposed T17 and T18 locations.

The site borders to the west the Muirkirk and North Lowther Special Protection Area (SPA), designated for breeding hen harrier, merlin, short-eared owl, peregrine and golden plover, and non-breeding hen harrier; and Muirkirk Uplands Site of Special Scientific Interest (SSSI), designated for breeding and wintering hen harrier, breeding short-eared owl, the wider breeding bird assemblage and blanket bog. Within the site is the Birkenhead Burn SSSI and Birk Knowes SSSI, designated for their geological features.

2.2 Ecology

The bulk of the site comprises commercial plantation and associated heavily modified landscapes.

EIA Report Figures 7.3 a to e present results of habitat surveys undertaken on site. They show that blanket bog is represented in the study area mainly by National Vegetation Classification (NVC) M19 *Calluna vulgaris – Eriophorum vaginatum* and M18 *Erica tetralix – Sphagnum papillosum* blanket mire communities. Within the site it is mostly concentrated around Nutberry Hill (M19) and north of Birkenhead Burn (M18 and M19), although much of the surrounding land to the west and south

of the site are contiguous expanses of various mire habitats, mainly M19 according to SNH's NVC survey data of the Muirkirk & North Lowther Uplands SPA. The communities within the site are classified as blanket bog, rather than wet modified bog, as they often represent areas of relatively undamaged and better-quality blanket bog where *Sphagnum* moss can be abundant.

The NatureScot Carbon and Peatland Map 2016[2] indicates that a discrete area of Class 1 peatland ("likely to be of high conservation value") exists within the site across Nutberry Hill (EIA Report Figure 7.2). A large area of Class 1 peatland is also located outwith and immediately to the west of the site, which falls largely within the Muirkirk and North Lowther Uplands SPA.

The ecology chapter concluded that unmitigated, there would be a minor adverse effect on blanket bog, including wet modified bog, due to habitat loss. A direct loss of 0.76 ha would occur due to permanent infrastructure, with a further loss of 2.4 ha located within areas of temporary infrastructure. When including potential indirect losses out to 10 m from infrastructure, this would increase to 2.0 ha for permanent infrastructure, and 3.0 ha for temporary infrastructure. There were no unmitigated effects above negligible significance predicted for any other habitats.

In relation to protected species, no protected features for or evidence of otter, water vole, pine marten, red squirrel or great crested newt were recorded within the site, and only limited suitable habitat exists along watercourses for otter and water vole. Evidence of badger usage was recorded within the site, but the closest sett recorded was outside of the site. All protected species would be subject to protection during the construction and decommissioning phases of the Proposed Development, as part of a Species Protection Plan.

Bats were the only protected species taken forward to assessment, with an unmitigated moderate adverse effect predicted to *Nyctalus* species, and a minor adverse effect for pipistrelle species, due to collision risks. To mitigate for this, no trees would be replanted within 75 m of operational turbines, to reduce bat activity near rotor blades, and a Bat Mitigation and Monitoring Plan would be implemented (see EIA Report Chapter 7: Ecology for details).

2.3 Ornithology

The site, comprising of commercial forestry, is of relatively low conservation value for birds, although, has in recent years hosted a goshawk territory, with nest site location being subject to change depending on the location of forestry clearance operations. No Muirkirk and North Lowther Uplands SPA qualifying species were recorded breeding within 2km of the site during baseline surveys, and historic records provided by the South Strathclyde Raptor Study Group indicated that no hen harrier or merlin have bred within 2km of proposed turbine locations within the last ten years. A peregrine nest, located approximately 2.0km away from the nearest proposed turbine location, but outside of the SPA, has been regularly occupied in recent years.

Historic survey records from local wind farm projects have indicated that black grouse and curlew have previously been present within moorland to the west of the site, but during baseline surveys no black grouse were recorded, and two curlew territories were located over 600m from the site.

The ornithology chapter concluded no significant unmitigated effects on any ornithological receptors (at most minor adverse significance). Enhancement measures within this OHMP would

[2] https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/

be consistent with the requirements of SPA qualifying features and the SPA's Conservation Objectives, and benefit upland breeding birds in general.

3. MANAGEMENT UNITS

The Applicant has committed to compensating for the extent of direct and indirect loss of blanket bog, including wet modified bog, as a minimum requirement of the HMP. It is however also the intention of the Applicant to enhance a wider area within the Management Units, to provide an overall benefit to ecology and ornithology. It is presently proposed that the outline HMP area would consist of two Management Units (A and B) within which management will be implemented; EIA Report Figure 7.13 shows the location of these areas. At this outline stage of the HMP, these two Management Units should be considered as search areas, where within all, or part of these areas, management would take place.

Further detail on each Management Unit is provided below.

3.1 Management Unit A

Management Unit A search area is approximately 48ha in size and is located to the north of Birkenhead Burn (EIA Report Figure 7.13). The area comprises extents of deeper peat, often >2.0m, and has a low conifer tree stocking density due to a historic muirburn that escaped into the forest, and since then there has been little management to improve the crop. Currently the whole area is categorised as being under Long-term Retention in the baseline felling plan, although this is under review.

This Management Unit has been identified primarily for the maintenance, restoration and enhancement of blanket bog habitats, which are subject to encroachment from self-seeding conifer trees from the surrounding conifer plantation, and is affected by historic drainage, and drying effects of mature plantation. This is a desirable option as these bog habitat types are Annex I EU Habitats Directive habitats, Scottish Biodiversity List (SBL)[3] and UK Biodiversity Action Plan priority habitats[4], and negative effects have been identified as a key issue in the South Lanarkshire Biodiversity Strategy 2018-2022[5]. The Management Unit is also contiguous with the Muirkirk Uplands SSSI which is notified for its blanket bog.

The NVC survey undertaken for the EIA in 2019 determined that the main habitat types present within Management Unit A are M18 in a mosaic with M19 mire. M18 was recorded as the M18a *Sphagnum magellanicum – Andromeda polifolia* sub-community. This sward contains *Calluna vulgaris*, *Eriophorum vaginatum*, *Erica tetralix*, *Vaccinium myrtillus*, occasional *Trichophorum germanicum*, *Molinia caerulea*, and *Empetrum nigrum* along with an abundance of *Vaccinium oxycoccus* and *Drosera rotundifolia*. Carpets of *Sphagnum* moss dominated much of the basal layer with *Sphagnum papillosum*, *S. magellanicum*, *S. capillifolium* and *S. fallax*. M19 commonly appears in the form of M19b *Empetrum nigrum* sub-community in homogenous stands. These areas are characterised by the co-dominance of *Calluna vulgaris* and *Eriophorum vaginatum* with often an equal abundance of *Vaccinium myrtillus* and *Empetrum nigrum*.

[3] https://www.nature.scot/scotlands-biodiversity/habitat-definitions
[4] http://jncc.defra.gov.uk/page-5718
[5] https://www.southlanarkshire.gov.uk/download/downloads/id/1191/biodiversity_strategy_2018_-_2022.pdf

Results from peat probing and subsequent interpolation of this to extend across the site as part of the EIA submission, suggest that Management Unit A is likely to comprise of peat generally more than 0.5 m deep, and often over 2m deep, although some areas towards the southern part may be under 0.5m in depth. This conclusion was consistent with observations made during a walkover visit in 2020, where open habitats were generally of the type supported by deeper peat.

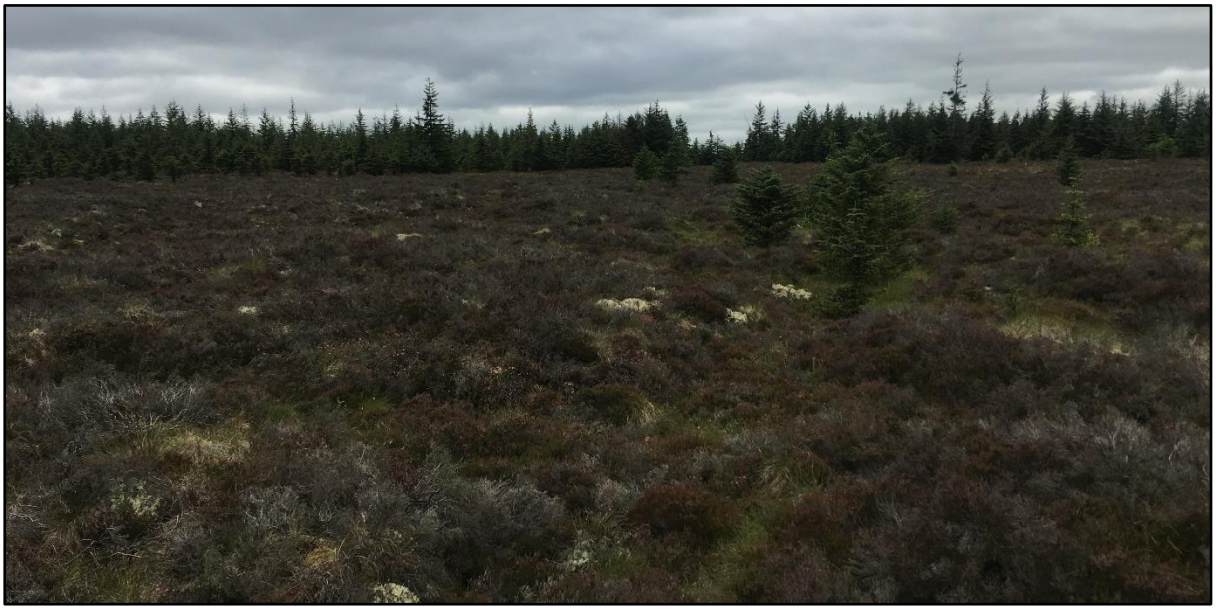

Photo 1: View of Management Unit A, showing heather-dominated bog habitat with self-seeded non-native conifers and mature forestry in rear.

Photo 2: Within mature conifer plantation in Management Unit A, showing ridge and furrow profile and dominance of pleurocarpous mosses indicative of the drying effects and low light levels within plantation forestry.

3.2 Management Unit B

Management Unit B comprises an area of approximately 26ha within the centre/west of the site, adjacent to the SPA and SSSI (Figure 7.13). Peat probing has shown that much of this area is likely

to have underlying deeper peat, >1.0m depth. According to the baseline felling plan, this currently forested area is to be felled between 2021 and 2030, with the baseline replanting plan indicating that this area would be left mainly as open ground, with restock margins managed as natural reserve. Management Unit B would therefore remain similarly open as part of the Proposed Development but also be subject to bog restoration, using a combination of reprofiling techniques used in deforested areas such as surface smoothing and drain blocking using any extant forestry material in-situ, and peat excavated for the Proposed Development from elsewhere within the site, to create a substrate suitable for bog habitat restoration, contiguous with the bog that forms part of the SSSI. Bog reprofiling/smoothing would be the preferred method, but excavated peat would be used for peat dams in appropriate circumstances, in line with relevant guidance. The extent of such techniques would depend on the final amount of surplus acrotelmic peat available as a result of the Proposed Development. More detail on the bog restoration techniques would be provided in the final HMP and agreed with site contractors and stakeholders prior to commencement. Exact methods and the extent of usage would be subject to site conditions and availability of materials, but consideration would be given to evidence of various forest-to-bog restoration techniques, e.g. those summarised in Thom *et al.* (2019[6]), Campbell and Robson (2019[7]).

At the perimeter of Management Unit B, forest edge earmarked in the existing Cumberhead Complex Baseline Replanting Plan (refer to EIA Report Figure 16.2) for Natural Reserve would continue to be managed with minimum intervention, but additional planting of native tree species adjacent to Natural Reserve, or in small, discrete coupes would also take place within Management Unit B to enhance biodiversity.

4. AIMS, OBJECTIVES AND MANAGEMENT PRESCRIPTIONS

The Outline HMP has the following two Aims:

- **Aim 1: Maintain, restore and enhance blanket bog habitats within the site; and**
- **Aim 2: Increase diversity of habitats for the benefit of species within the site.**

These Aims are designed to be compatible with one another and also sympathetic to the management objectives of the Muirkirk Uplands SSSI[8] and conservation objectives of the Muirkirk and North Lowther Uplands SPA[9] – for example, improved blanket bog conditions may benefit breeding raptors, waders and their prey, as well as retaining more water and releasing it more slowly, thereby reducing flooding risk lower in the catchment area. Blocking of any drains or deep furrows would help prevent species such as black grouse or wader chicks from becoming trapped and drowning.

The two Aims would have related Objectives which define quantifiable targets to fulfil the Aims. Each Objective would have associated Prescriptions which detail the indicative management works to be implemented to achieve these Aims and Objectives.

[6] Thom, T., Hanlon, A., Lindsay, R., Richards, J., Stoneman, R. & Brooks, S. (2019). Conserving Bogs: The Management Handbook (3rd Ed.). IUCN Peatland Programme.
[7] Campbell, D. and Robson, P. (2019). Peatlands and Forestry. Review for the IUCN UK Peatland Programme Commission of Inquiry on Peatlands.
[8] https://sitelink.nature.scot/site/8166
[9] https://sitelink.nature.scot/site/8616

Section 7 provides an indicative timetable for the implementation of the various Prescriptions, which would be agreed prior to finalisation of the final HMP.

Objective 1.1	Increase the extent of blanket bog habitat within Management Unit A compared to current conditions.
Objective 1.2	Create/restore/enhance/maintain bog habitat within Management Units A and B so that it is classified as being in favourable condition, as per JNCC (2009[10]) Common Standards Monitoring guidance.
Prescription 1.1	Reduce the extent of conifer coverage within Management Unit A by removal of planted and self-seed non-native conifers outside any extents demarcated as commercially viable Long-term Retention area.
Prescription 1.2	Dam any active drains within Management Unit A in order that the water level is raised sufficiently to create wetter conditions suitable for peat-forming bog species.
Prescription 1.3	Wide mesh stock fencing would be used for any new fences so that black grouse chicks are not trapped, and will be marked by suitable means, following guidance in Trout & Kortland (2012)[11] to reduce potential collision risks. The fence would be checked annually to ensure the area remains stockproof with any fence breaches repaired.
Prescription 1.4	The following activities will be prohibited within Management Unit A: • Clearing out of existing ditches. • Application of any insecticides, fungicides or molluscicides. • Application of lime or any other substance to alter the soil acidity. • Cutting or topping vegetation except to control injurious weed species. • Burning of vegetation or other materials. • Use of roll or chain-harrow. • Planting trees outside of demarcated commercial Long-term Retention areas. • Carrying out any earth moving activities. • Use of off-road vehicle activities other than for regular farm/estate management. • Construction of tracks, roads, yards, hard-standings or any new structures, other than those for the Proposed Development.

[10] JNCC (2009). Common Standards Monitoring Guidance for Upland Habitats. Joint Nature Conservation Committee.

[11] Trout, R. and Kortland, K. (2012). Fence marking to reduce grouse collisions. Forestry Commission Technical Note.

Objective 2.1	Create blanket bog habitat within Management Unit B by restoration of post-felling ground conditions.
Objective 2.2	Create suitable conditions (e.g. raising water table, removing ridge-furrow profile) for key indicator bog species such as *Sphagna* within Management Unit B.
Prescription 2.1	Remove the stump/ridge furrow legacy of the conifer plantation within Management Unit B in line with emerging best practice methods for peatland restoration (e.g. see Short and Robson, 2016[12]; Campbell and Robson, 2019[7]) through use of appropriate techniques, including using any excess peat excavated from the site as part of the Proposed Development (note, this peat should only be acrotelmic - turf - material where available). To avoid erosion or sedimentation, appropriately sized vegetated buffer strips may be left around watercourses (10-20m) if potential connectivity exists.
Prescription 2.2	Dam active drains within Management Area B in order that the water table level is raised sufficiently to create conditions suitable for peat-forming bog species. Ground smoothing may remove most of the forest drains on site, however, if other larger drains remain then peat dams or plastic piling may be used.
Prescription 2.3	Prohibit activities within Management Unit B, as per Prescription 1.4.
Prescription 2.4	Check for any self-seeded exotic conifer saplings or trees within Management Unit B and determine the best management practice for removal. Conifer regeneration could be dealt with by removal by hand if limited in extent, but otherwise additional treatment may be required depending on size and density. (e.g. by excavator).

Objective 3.1	Increase native tree cover within Management Unit B.
Prescription 3.1	Plant native woodland along Natural Reserve forest edges, and/or discrete coupes, within Management Unit B, where peat depth is sufficiently shallow (<0.5m). Depending on local ground conditions, tree species will comprise at least some of the following: grey willow *Salix cinerea*, downy birch *Betula pubescens*, alder *Alnus glutinosa*, rowan *Sorbus aucuparia*, aspen *Populus tremula* and hawthorn *Crataegus monogyna*. Exact proportions of species, planting locations and any grazing protection measures (e.g. tree tubes) would be determined by a forester during the construction period and 'on the ground' surveys. Planting would be carried out between the months of November and June when trees are dormant and more likely to establish successfully. Days when the ground is frozen or when snow or excessive surface water is present are to be avoided.
Prescription 3.2	Any new fencing would follow guidelines in Trout & Kortland (2012)[11] as outlined in Prescription 1.3. Fencing would be designed to follow contour lines as much as possible and be located downslope along watercourses, to minimise collision risk for black grouse.

5. MONITORING

Monitoring will establish whether the proposed management Prescriptions are achieving the various Aims and Objectives and in turn will inform adaptive management to ensure the Aims and Objectives are achieved through the life of the HMP.

[12] Short, R., and Robson, P. (2016). An Innovative Approach to Landscape-Scale Peatland Restoration. CIEEM In-Practice, Issue 93, September 2016.

5.1 Peat Dam Monitoring

Any peat dams within Management Units A and B would be inspected by a suitably qualified ecologist during installation and each year thereafter until Year 3 of operation, reducing to one inspection every five years during the remainder of the operational period.

Any leakage around dams or failing dams would be notified and remedial measures, such as extending dams or re-damming, would be considered.

After ten years an assessment should be made to identify whether further locations for additional dams would provide further improvements to habitat quality.

5.2 Vegetation Monitoring

Vegetation monitoring within Management Units A and B would evaluate the restoration and enhancement of blanket bog habitat types by recording changes to the structure and composition of the vegetation and species abundance, evenness and diversity, and the abundance of regenerating conifers. Recording impacts from deer would also be included in the monitoring programme. Monitoring would be undertaken in years 1, 3, 5, 10 and 15 of the operational life of the Proposed Development. The frequency of monitoring thereafter would be agreed with NatureScot and the Planning Authority.

Following monitoring, a review would be undertaken as to whether management prescriptions appear to be working, and whether a revision of methods, or additional management would be required to achieve the HMP's Aims and Objectives.

5.3 Tree Monitoring

Monitoring of the native broadleaved planting would be undertaken in Management Unit B to ensure the establishment of the trees planted.

The planted area would be monitored in years 1-5 following planting, to assess beat up requirements and to monitor damage (e.g. browsing), disease or weed suppression impacts on trees. Failed specimens should be replaced in the subsequent winter-spring (i.e. between November and June) and required maintenance measures identified (bracken cutting, weeding etc).

If browsing and damage by deer or livestock becomes apparent, then measures would be identified to protect the trees. Any measures would be discussed and agreed with the landowner, NatureScot and the Planning Authority.

Management Unit B will be monitored again in operational Year 10 to ensure that there are no issues with disease or invasive species and to determine if any thinning at this stage would benefit woodland establishment. Monitoring would be undertaken again in operational Year 20 when some thinning operations may be required in order to encourage growth of better trees and create more open woodland, further new planting may also be considered. This will aid regeneration of seedlings and begin the process of establishing a mixed age structure.

6. REPORTING AND HMP REVIEW

A report will be submitted to NatureScot and the Planning Authority annually for the first 5 years of operation, the frequency of reporting after Year 5 will be agreed with NatureScot and the Planning Authority. This report will detail:

a) Management undertaken in the past year;

b) Monitoring undertaken, results and discussion of results; and

c) Management and monitoring proposed for the following year.

Where monitoring indicates any management objectives are not being met, further management prescriptions or interventions would be agreed with the landowner and subsequently NatureScot and the Planning Authority.

The requirement for the measures, monitoring and reporting following year 15 of the operational phase will be dependent on the results of the monitoring which will be discussed and agreed with NatureScot and the Planning Authority in year 15.

In addition, the HMP will be reviewed by NatureScot and the Planning Authority every five years from its commencement, or earlier if considered necessary. The purpose of the review will be to assess the effectiveness of the proposed management prescriptions at achieving the Aims and Objectives of the HMP. If necessary, such measures may be amended by the Applicant at any time, in agreement with the landowner and subsequently NatureScot and the Planning Authority.

7. HMP TIMETABLE

Table 7-1 below provides an indicative management and monitoring timetable for construction and the first 15 years of operation of the site, as discussed in the various sections above.

Table 7-1 HMP Management & Monitoring Timetable (year 0 = during construction; year 1 = first year of commissioning etc.)

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Work Item	Year of Implementation															
Management Prescriptions																
Felling of any mature conifers in Management Units A & B	X	X														
Ensure stock fencing (A & B)	X	X														
Check integrity of fence/repair if required (A & B)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Removal of existing stump/ridge furrow legacy and reprofiling (A & B)	X	X	X													
Drain blocking (A & B)	X	X	X													
Excluded activities as per Prescription 1.4 (A & B)	Throughout lifetime of HMP															
Native tree planting – Management Unit B	X	X														
Remove self-seeding exotic conifer saplings (A & B)	X	X	X	X	X	X										
Monitoring																
Inspection & maintenance of drain blocking/peat dams (A & B)		X	X	X		X					X					X
Vegetation monitoring (A & B)		X				X					X					X
Forestry growth monitoring Management Unit B		X	X	X	X	X					X					
Reporting																
Annual HMP report		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5-year HMP review						X					X					X