11	**Peatland Condition Assessment** This compartment is classified as Bog (60%) by the Peatland Condition Assessment. 5% is Modified and 95% is highly Modified. The compartment is highly modified due to a deeply incised eroding gully running north to south, with bare peat and exposed bedrock. As a result, the southern half is predominantly M15c wet heath. The most intact bog is confined to the northern half of the compartment. To the south of Compartment 11, two small stretches of M11 *Carex demissa – Saxifraga aizoides* mire containing yellow saxifrage (*Saxifraga aizoides*) occur. **Peatland Survey** The erosional gully (G11) that runs north to the south was observed during the peatland survey. Gully water flow was greatest in the northern section of the compartment. The gully was associated with observable signs of degradation, including smaller erosional gullies, peat hags, and bare peat areas, including a large bare peat area at the southern end	To slow the flow of water through G11 at the northern part of the gully. The width of the gully varies substantially and is ~10m wide at its widest point. In wide gullies, like G11, staggered baffle installation can be appropriate (NatureScot, 2022). Baffles should be placed at the top of the gully, confluences, pinch-points, and changes from mineral to peat-based substrate. They can also be used to deter water away from re-profiled haggs (Yorkshire Peat Partnership, 2017). To stabilise, reprofile and revegetate peat hags associated with Gully 11 (typically 2-3m high). Whole turving could be used for revegetation and make use of excess peat from construction, if available. To revegetate the large bare peat area at the southern end of the compartment (Bare Peat Area 11) that comprises two areas. The largest area is approximately 15m long and 4m wide and the smaller area is around 8m long and 3m wide. The edges of the bare peat area are >0.5m deep. Whole turving could be used for re-vegetation and make use of excess peat from construction, if available Restore bare peat track damage using mulching and textiles (NatureScot, 2022). Alternatively, continued damage could be mitigated by, for example, using track matting.	Reducing the flow of water through Gully 11 will: re-wet the compartment by raising the water table; encourage a more natural blanket bog hydrological setting; increase the abundance and distribution of bog-moss (Sphagnum sp.) and other bog species; and prevent further erosion of gullies and haggs. Stabilising, reprofiling and revegetating peat hags and bare peat areas will reduce direct losses of CO_2 to the atmosphere from peat oxidation in the long-term and halt further erosion at these locations. These restoration measures could restore an area of around 2.47 Ha.

	of the compartment (Bare Peat Area 11). Track damage was also observed approximately in the centre of the compartment. **UKHab Survey** The UK Habitat survey recorded 2.47 Ha of degraded blanket bog in poor condition which surrounds 0.21 Ha of blanket bog in good condition. A gully and two large areas of bare peat are present. The water table is much lower than surface level with up to 30% of bare peat in the most degraded areas. Peat forming sphagnum and cottongrass species are occasional overall and rare in the driest areas adjacent to the gullies and bare peat.		
12	**Peatland Condition Assessment** The Peatland Condition assessment classifies compartment 12 as 100% Bog (Modified: 60% and Highly Modified: 40%). The north-east section of this compartment has a high water table but very little bog-moss (Sphagnum sp.), even in bog pools. Further south, the extent of bog-moss (Sphagnum sp.) increases but only common species are present and the bog pools are	To slow the flow of water through G12 (in the area marked on the Figure 3, page 2). G12 is approximately 3m wide and 1m deep but highly variable. In wide gullies, like G12, staggered baffle installation can be appropriate (NatureScot, 2022). Baffles should be placed at the top of the gully, confluences, pinch-points, and changes from mineral to peat-based substrate (Yorkshire Peat Partnership, 2017).	The restoration areas were selected as these were deemed to be where restoration would be the most effective on the ground during the peatland survey. Identified as points where bog water drainage was greatest and should be mitigated. The measures suggested should work towards re-wetting the blanket bog, reinstating a more natural hydrology, and encouraging the re-colonisation of blanket bog species. By restoring bare peat areas, the development of further erosional features

	species-poor M3. Towards the western margin, the water table is substantially lower, with incised, eroding channels of bare peat. **Peatland Survey** The peatland survey observed a wide gully network in the centre of the compartment. In the southern part of this network there was a distinct gully channel (G12) and associated erosional features, including large bare peat areas (such as BPA12A). There was also extensive track damage within the compartment (BP T12). **UKHab Survey** The UK Habitat Survey recorded 2.51 Ha of degraded blanket bog in poor (1.34 Ha) and Moderate (1.18 Ha) condition. The water table is below surface level in most areas with several bog pools remaining in the lowest areas. Overall, the habitat appears to be transitioning to heath and is generally dominated by dwarf shrubs or other heath species with peat forming and bog species reduced. Deer grass was at least abundant throughout, purple moor grass at least frequent, ling heather and cross leaved heath were at least occasional. Dwarf birch was	To stabilise, reprofile and revegetate bare peat areas associated with it (including Bare Peat Area 12A). BPA12 was estimated to be 8m wide and 12m long with bare peat banks that are approximately 0.5m deep. Whole turving could be used for revegetation and make use of excess peat from construction, if available Restore bare peat track damage (BPT12) using mulching and textiles (NatureScot, 2022). Alternatively, continued damage could be mitigated by, for example, using track matting. As with compartment 7, the Outline Habitat Management Plan identified opportunities for use of construction excavated peat here, which remains the case.	should be mitigated, and losses of carbon stored within the peat will be reduced. These restoration measures could enhance an approximate blanket bog area of 2.51 Ha.

	locally rare in dryer areas amongst the heath species. Bog species such as hares tail cotton grass and sphagnum varied considerably from occasional to frequent depending on proximity to bog pools and other hollows where sundew also appeared as locally rare.		
14b	Natural channels cut through the centre and western side of the compartment and there are some minor signs of grazing. However, the UK habitat survey found no signs of degradation in blanket bog present within compartment 14b. Therefore, restoration of this compartment is not recommended.	N/A	N/A
14c	Two minor channels were observed in the southern and northern edges of the compartment. A peat hag was also observed close to the northern channel. However, the UK habitat survey found no signs of degradation in compartment 14b. Therefore, restoration of this compartment is not recommended. The northern channel in compartment 14b is associated with a larger channel that runs through compartment 15. This channel will	N/A	N/A

	be mitigated within compartment 15, where the main channel is present.		
15	**Peatland Condition Assessment** Results from the Peatland Condition Assessment for this compartment were 90% Bog (5% Near-natural and 95% Modified). The least modified area lies to the west, close to where the substation is proposed. Bog-moss (Sphagnum sp.) is scattered throughout but is almost entirely species associated with wet heath i.e. red bog-moss and scarce compact bog-moss. **Peatland Survey** Two channels were noted during the peatland survey: one on the southwestern end of the compartment (C 15A), and another in the northwest corner (C15B). In addition, extensive track bare peat areas were identified in the northeastern part of the compartment. **UKHab Survey** 4.06 Ha of degraded blanket bog in poor condition. Water table is below surface level except for a few remaining bog pools in lower areas.	Block and reprofile C15A. C15A is approximately 3-4m wide and 1.5m deep, but variable down its entire length. Plastic piling or composite dams would be appropriate here. Depending on the depth of peat/clay substrate present (>75cm required for plastic piling dams). Composite dams may be more appropriate as plastic piling dams can lead to chemical leaching into the environment. Furthermore, composite dams can include a variety of materials, such as wood and peat (which may be a suitable use for any excess peat arising from construction). The full channel length should be dammed, and dams can be placed at intervals of between 3-15m, depending on the slope. Damming should be combined with reprofiling to avoid the creation of deep pools (NatureScot, 2022). Block and reprofile C15B. Channel 15B is smaller, approximately 0.5m wide and 0.5m deep. This location is suitable for peat dams. The full length of the channel should be dammed and dams should be placed at intervals of between 3-15m, depending on the measured slope (NatureScot, 2022).	Channels C15A and C15B were chosen for restoration as they were identified as key water draining points within the compartment, leading to peatland desiccation and species shifts. Reducing the amount of water lost through C15A and C15B should raise the water table and aid species recovery to normal levels. Restoring or mitigating the bare peat track areas present will prevent further losses of peatland carbon stored and the erosion becoming more widespread across the compartment. These measures could restore an approximate blanket bog area of 4.06 Ha. There is also potential to extend restoration to the degraded area southwards, that sits outside of the compartment.

	Generally, the species composition is transitioning to more heath dominant species and peat forming species occasional to absent	Restore bare peat track damage using mulching and textiles (NatureScot, 2022). Alternatively, continued damage could be mitigated by, for example, using track matting. Tracks are typically 4-5m wide, but 8-10m wide in some areas. Composite and peat dam creation, in this compartment, could utilise excess peat from the proposed substation, (located on the western side of the compartment). If available for restoration and found to be suitable at construction stage.	
17	**Peatland Condition Assessment** This compartment was deemed to be 90% bog (Near-natural:5%; Modified:90%; and Highly Modified:5%) by the Peatland Condition Assessment. The assessment found that both the near-natural and highly modified parts of this compartment are within the area of deepest peat. The highly modified part has only localised bog-moss (Sphagnum sp.), drier hummocks turning to M15c wet heath and drains westwards.	To block and reprofile Channel 17A. A plastic dam was already in place at the eastern end of the channel, but additional channel blocking would enhance restoration as running water was still present downstream from this. The width of the channel varied between approximately 0.5-1.5m and it was estimated to be 1m deep. Plastic piling or composite dams would be appropriate here. Depending on the depth of peat/clay substrate present (>75cm required for plastic piling dams). Composite dams may be more appropriate as plastic piling dams can lead to chemical leaching into the	C17A was selected for restoration as it was identified as a key location for water loss from the compartment. Reducing the flow in Channel 17A could rewet the western section of the compartment (where degradation is most pronounced); enhance bog species abundance; and prevent the eastern part becoming more degraded. In addition to this, mitigating against the risk of enhanced track damage will prevent further peatland erosion and losses of carbon stored in the bog. This restoration could help to restore an approximate area of 3.62 Ha.

	Elsewhere, the bog-moss (Sphagnum sp.) is relatively abundant in places. **Peatland Survey** Several small channels and gullies cut through the compartment. However, during the peatland survey, only one distinct channel was observed on the ground, on the western side (C17A). There was also track damage in the northern part of this compartment (BPT17). **UKHab Survey** The UK habitat survey recorded 3.62 Ha of degraded blanket bog in poor condition (2.18 Ha) and blanket bog in moderate condition (1.44 Ha).	environment. Furthermore, composite dams can include a variety of materials, such as wood and peat (which may be a suitable use for any excess peat arising from construction). The full channel length should be dammed, and dams can be placed at intervals of between 3-15m, depending on the slope. Damming should be combined with reprofiling to avoid the creation of deep pools (NatureScot, 2022). Restore bare peat track damage using mulching and textiles (NatureScot, 2022). Alternatively, continued damage could be mitigated by, for example, using track matting.	
22	**Peatland Condition Assessment** This compartment was categorised to be 75% Bog, 100% of which was Highly Modified. The Peatland Condition Assessment reported that it had a lowered water table that has created hummocks, most of which are drying and approaching M15c wet heath. Bog-moss (Sphagnum	To slow the flow through G22 and reprofile the peat hag associated with it (PH22). The gully is approximately 3m wide and PH22 was estimated to be 2-3m high. The gully is on steep sloping land and therefore it is appropriate for mitigation suggestions for this to be given by the appointed construction contractor, who will be experienced in peatland restoration on the ground. The works should align with NatureScot guidance (2022).	G22 was chosen for restoration as other channels visible on the aerial imagery were not as prominent on the ground or did not appear to be leading to bog drainage. The location, and peat substrate, at G22 implied that it does have flowing water within it at wetter times of the year, thus draining the bog. Therefore, slowing the flow of water through G22 would reduce the loss of water from the compartment; restore a more natural hydrology; and encourage bog species recovery. The mitigation of bare track damage will also help to prevent

	sp.) is scarce over large areas and the bog pools are species poor M3. **Peatland Survey** The peatland survey observed a significant Gully (G22) on the southeastern corner. This gully is likely draining the bog during wetter periods of the year and has an associated peat hag channel bank (PH22). Bare peat track was also extensive within this compartment at BPT22 marker point and extended laterally from here. **UKHab Survey** The UK Habitat Survey recorded 3.68 Ha of degraded blanket bog in poor condition. The water table is low and below surface level with peat forming species rare across large portions of the area.	Restore bare peat track damage using mulching and textiles (NatureScot, 2022). Alternatively, continued damage could be mitigated by, for example, using track matting.	peatland erosion expanding beyond the current track area, and keep carbon stored within the bog. Collectively these measures could help to enhance approximately 3.68 Ha of blanket bog area.

5 Montane scrub planting

5.1 Location

5.1.1. Four indicative montane scrub planting areas totalling 23.25 Ha have been identified as suitable for enhancement based on the findings of the UKHab and HCA surveys, shown in Figure 5 (this area is based on level of suitability for planting Areas 1 to 4 shown on Figure 5). The four areas vary slightly in suitability, in terms of areas which are likely to be good for establishment or planting, as well as exposure and topography. Areas 1 and 4 contain more rocky outcrop features, providing shelter. Altitude across the areas ranges from 350 m above sea level (asl) to 510 m (asl).

5.1.2. Montane scrub planting within these areas would contribute to accomplishing Objective 3 of the HMP. Site specific preparation, planting specifications and methodologies and aftercare are detailed below.

5.1.3. The areas suitable for montane scrub planting consist of several habitat types in variable conditions. Additionally, the areas differ in terms of their topography, elevation, percentage cover of rocky outcrops, exposure and prevailing wind direction which will impact the planting densities and percentage cover of montane scrub planting suitable within each location. Precise planting locations, planting density and sex ratio for dioecious species should be determined by the planting team, to be accompanied by an ecologist to ensure suitable planting locations are selected. Locations with the following characteristics should be selected: free drainage, shelter, deep soil for rooting, nutrition, warm soil temperature, minimal root competition and full sunlight (in the case of most species).

5.2 Montane Scrub Planting Objectives

5.2.1. The details provided below, meet with Aim 3: to detail locations and planting requirements for montane scrub creation. The montane scrub planting has the core objective as set out in Objective 3: To enhance biodiversity in the wider area, and specifically provide suitable habitat for black grouse, whilst maintaining areas of open ground for golden eagle.

The following sub-objectives relating specifically to montane scrub are also set out:

3.1 Increase the abundance and distribution of native tree and shrub species.

3.2 Provide connectivity to existing woodland areas.

3.3 Increase habitat structure and ecological value by planting in open and unplanted areas.

3.4 Suitable rocky locations for golden eagle perching/ roosting to be left unplanted.

5.3 Site preparation

5.3.1. Hand planting will be undertaken. ‘Screefing’ can be used to remove vegetation and organic matter to form a shallow mineral scrape for planting into. The minimum area should be 30 x 30cm however it is important to dig deeply to break through any compacted soil layers.

5.4 Planting specification

5.4.1. Following best practice guidance (Mountain Woodland Project – Best Practice Guide 3 (BPG3)[13]) the montane scrub planting should look to include:

- Downy birch and rowan, plus the following montane species:
- Whortle-leaved willow *Salix myrsinites* and
- Mountain willow *Salix arbuscula*.

The following secondary scrub species are also recommended:

- Dwarf birch *Betula nana*; and
- high-altitude populations of both upright and prostrate juniper (these can be translocated from the Development Site).

5.4.2. Soil conditions should be explored, through the digging of soil pits, along with pH testing of the soil will be undertaken in each of the montane planting areas in advance of final species selection to ensure a suitable species mix is selected. Species specific soil requirements are listed in BPG3 and the final species maybe dependant on plant availability but will be selected from the recommended species list.

5.4.3. The precise planting ratios will be dependent on available planting stock. Planting stock will be obtained from Trees for Life, or another suitable nursery of appropriate province stock.

5.4.4. Precise planting locations will be determined at the time of planting. The baseline survey identified that Areas 1 to 4 would be suitable for planting, but not all locations within an Area are suitable for planting. Locations within each Area will target locations with suitable characterises for montane shrubs, as detailed above. It is estimated 25% of Area 1 is suitable for planting, 20% of Area 2 is suitable, 15% of Area 3 is suitable and 30% of Area 4 is suitable.

5.4.5. If available, planting stock with a 5 mm or above root collar will be selected to aid survival.

5.4.6. Across each area, downy birch, rowan and juniper should be planted at the lower altitudes, dwarf birch and willow species should be planted at the higher altitudes.

5.4.7. Ensure the good health of plants being used and check for current policy and guidance on tree diseases. In particular see guidance on Juniper (DEFRA 2017, FCS 2013). Otherwise ensure no planting stock is carrying disease (e.g.rusts in willow) that may be inadvertently imported into an existing population.

5.4.8. Ectomycorrhizal fungi are required for these montane tree species to survive. To maximise potential success of the planting a suitable donor site will be identified in advance of the

[13] https://www.msag.org.uk/uploads/4/0/7/3/40732079/bpg3_site_and_species.pdf [Accessed August 2023].

planting, humus from the donor site will then be placed in areas around the tree planting locations. The donor site should be of a similar altitude and soil type.

5.5 Planting methodology/ Timescales

5.5.1. Planting to be scheduled for late spring to allow the plants to establish before the winter dormancy.

5.5.2. For willow scrub, post-planting a small amount of slow-release fertiliser (predominantly containing phosphate) applied in the hole after planting is recommended.

5.6 Aftercare requirements

5.6.1. Check the plants are not frost-heaved over the first winter and continue to monitor over the first few seasons. Replacing failed planting/ diseased plants with specimens matching the original specification, in the next suitable planting season.

5.6.2. No substantial works to woody vegetation should be undertaken between March 1st and August 31st inclusive, in order to safeguard nesting birds.

5.6.3. Based on other montane planting schemes it is advised to account for a 25% loss of trees for the first five years. Initial planting ratios should account for potential losses. Where trees are successful, these areas will be targeted for additional planting.

6 Caledonian Woodland Planting

6.1 Location

6.1.1. An indicative Caledonian Woodland planting area of 23.64 Ha has been identified as suitable for enhancement based on the findings of the UKHab and HCA surveys, shown in Figure 6. This area is described in more detail in Table 2 below. This area was selected for woodland planting as is positioned away from windfarm to minimise any conflicts between golden eagle and the windfarm.

6.1.2. Caledonian Woodland planting within this area would contribute to accomplishing Objective 3 of the HMP. Site specific preparation, planting specifications and methodologies and aftercare are detailed below.

6.2 Caledonian Woodland Planting Objectives

The details provided below, meet with Aim 3: to detail locations and planting requirements for Caledonian woodland creation. The montane scrub planning has the core objective as set out in Objective 3: To enhance biodiversity in the wider area, and specifically provide suitable habitat for black grouse, whilst maintaining areas of open ground for golden eagle. The following sub-objectives relating specifically to Caledonian woodland are also set out: 3.4 Increase the abundance and distribution of native tree and shrub species.

3.5 Provide connectivity to existing woodland areas.3.6 Increase habitat structure and ecological value by planting in open and unplanted areas.

3.7 Provide suitable habitat/ food supply for black grouse.

3.8 Maintain areas of open ground for golden eagle foraging.

6.3 Site preparation

6.3.1. Ground preparation should follow advice and best practice outlined in the Forest Ground Preparation Information Note ODW 10.0[14]. Ground preparation: to create a good tilth (lose friable soil) in which to plant while minimising disturbance of adjacent ground to retain the existing vegetation. The cultivation method will be determined by the contractor undertaking the planting. Ground preparation shall be undertaken during dry conditions, if possible, to minimise any increased risk of erosion and water run-off and damage to soil structure. Undertaking this work during the autumn will also minimise weed colonisation before planting, whilst still allowing approximately 2 months before planting to allow any cultivation of the ground to settle.

[14] https://cdn.forestresearch.gov.uk/2022/02/odw1001-2.pdf [Accessed August 2023].

6.4 Planting specification

6.4.1. Species composition of the woodland will comprise:

- Scots pine *Pinus sylvestris* – 80%
- Downy birch *Betula pubescens*, silver birch *Betula pendula*, rowan *Sorbus aucuparia*, juniper *Juniperus communis or* in areas of wetter ground, particularly around Loch a'Mheig and the watercourse from this, alder *Alnus glutinosa* and willows *salix* sp to be included – 20%

6.4.2. Planting will be undertaken to achieve a density of 500 at year 5 per hectare.

6.4.3. Species selection has followed guidance with respect to local seed zones, to ensure those included are appropriate to the region[15].

6.4.4. The planting will adhere to Scottish Forestry's policy for sourcing planting material for native species of trees and shrubs, namely:

- The sourcing of planting stock should help achieve both the conservation and sustainable use of genetic resources, in accordance with the UK's international commitments.

6.4.5. Scottish Forestry promote the availability and use of planting stock that will:

- Be both fit for purpose and ecologically adapted to the planting site.
- Maintain or enhance both genetic adaptation/fitness of our tree and shrub populations, and their capacity to adapt to changing environmental conditions.
- Sustain sufficient genetic variation to provide for future uses of trees for all purposes.
- Help to maintain and restore natural genetic processes in tree populations, especially gene flow and natural selection.
- Help conserve patterns of the genetic structure of tree populations that reflect their evolutionary history.

6.4.6. Accordingly, all plants shall be of Scottish Origin and from seed zone 202 as defined by Forestry Commission Scotland: 'Seed Sources for Planting Native Trees and Shrubs in Scotland' (2006).

6.4.7. All plants shall be obtained from stock conforming to the Forest Reproductive Material (Great Britain) regulations 2002, and a Horticultural Trades Association (HTA) accredited nursery in the Nursery Certification Scheme or membership of the Confor Nursery Producers' Group. Where the plant supplier is not accredited with the HTA or Confor Nursery Producers' Group, approval shall be sought from NatureScot providing suitable evidence that the nursery

[15] https://forestry.gov.scot/publications/18-seed-sources-for-planting-native-trees-and-shrubs-in-scotland/viewdocument/18 [Accessed August 2023].

complies with the latest best practice guidance on plant handling and production. Planting stock will be obtained from Trees for Life, or another suitable nursery of appropriate province stock.

6.4.8. The Contractor shall provide written confirmation of the provenance of the proposed planting material and that the native plant species have been sourced from the highest available preference for selecting native seed sources. This confirmation shall include confirmation of the seed certificates for the plants used in the Works.

6.4.9. Plant stock will be as follows:

- Transplant whips – minimum age 1+1years, minimum height above ground level 20-30cm

6.4.10. Planting shall be carried out in single species or multi- species clumps to obtain a natural effect. Generally (and unless dictated otherwise by soil type/micrositing), this shall involve plants being planted in random single species groups of at least 5 of the same species, with dominant plants planted throughout the mix area. Planting will be done with varied spacing within clumps or adjacent clumps to avoid the appearance of rows and grids and to provide a range of light and other conditions with the aim of enhancing biodiversity.

6.4.11. Planting should aim to follow a mosaic with ample areas left unplanted to allow the retention of the existing ground flora (heath). Tree species should be planted at irregular species with different species adjacent to each other to form the mosaic. Open space should be a minimum of 15% of the new planted area, to maintain open ground for golden eagle foraging.

6.4.12. New trees should be obtained from approved suppliers, to be sturdy and free from disease and fully hardened before installation.

6.5 Planting methodology/ Timescales

6.5.1. Plants shall be lifted, packed and handled in accordance with BS 3936, BS 4043 and the Horticultural Trades Association publication, the National Plant Specification, Section 10.2, Handling and Establishing Landscape Plants. Species shall be of local provenance as identified above using local suppliers and ordered well in advance of planting to ensure availability of stock.

6.5.2. Plants shall be sturdy, with a healthy leading shoot, and will have been grown and managed in the nursery to ensure a compact and fibrous root system.

6.5.3. Planting timescales will be determined based on the nature of the stock used. In the event of bare rooted stock this shall be planted between December and February, or container grown nursery stock shall be planted from November to February during favourable weather conditions.

6.5.4. Plants shall be notch-planted upright into a T-shaped opening of sufficient size for the roots of bare-root plants to be fully spread out.

6.6 Aftercare requirements

6.6.1. Allowing any deadwood to remain within the habitat to naturally degrade.

6.6.2. The on-going management of the newly planted woodland will be informed by the results of the monitoring (see Section 7.2 below). Likely actions include:

- Respacing to reduce light and space competition.
- Restocking to ensure target density is achieved. Replacing failed planting/ diseased trees with specimens matching the original specification, in the next suitable planting season.
- Management of Invasive Non-native Species (INN) and control of weeds and/or competitive grasses through the use of hand pulling during the establishment of the new woodland area.

6.6.3. The monitoring will be used to review the success of the deer management plan in terms of preventing grazing pressure. The review will identify any additional measures, such as consideration of fencing is required.

6.6.4. No substantial works to woody vegetation should be undertaken between March 1st and August 31st inclusive, in order to safeguard nesting birds.

7 Enhancements for nesting divers

7.1 Locations

7.1.1. A site suitability assessment was undertaken in July 2023 to assess the suitability of lochs for the installation of an artificial diver raft to improve the chances of breeding success by diver species. A single loch, Loch a' Chràthaich, immediately northwest of site was chosen as the most suitable location. This was on the basis that the loch has previously been used by black-throated diver, as was recorded during the 2019 breeding season. During these surveys, multiple observations of the species, including a pair showing signs of a potential breeding attempt on the edge of the loch were recorded. However, there was no further evidence of breeding thereafter, suggesting the loch's suitability for nesting is suboptimal. During the 2023 site suitability assessment, a single black-throated diver was observed loafing on the loch. Loch a' Chràthaich was considered the most suitable location due to the noted presence of black-throated divers, which are believed to be more likely to use and successfully breed on artificial diver rafts than red-throated divers.

7.1.2. Following the site suitability assessment and correspondence with the RSPB and NatureScot, potential locations within Loch a' Chràthaich have been identified for installing an artificial diver raft, shown in Figure 7. These options were selected as they are relatively sheltered from the prevailing wind and away from the shoreline, reducing the chance of the raft becoming grounded.

7.1.3. It is anticipated that enhancing the breeding suitability of Loch a' Chràthaich by installing a diver raft may increase the chances of black-throated divers successfully breeding on site.

7.2 Diver draft Objectives

7.2.1. The details in this section meets with Aim 4: to detail the location and specification for the installation of a artificial nesting raft for divers, which relates to Objective 4: to increase the availability of nesting sites for black throated divers.

7.3 Artificial nest specifications

It is recommended that the artificial diver rafts are designed to conform to the specifications outlined in (Hancock, 2000[16]). The size of the rafts should be between 2.4m x 2.4m and 3.6m x 2.4m, be built from polystyrene blocks sandwiched between wooden frames, and covered in growing tuft.

[16] Hancock M. (2000). *Artificial floating islands for nesting black-thraoted divers Gavia arctica in Scotland: construction, use and effect on breeding success*. Bird Study, 47, 165-175.

Detailed instructions on the construction of diver rafts, similar to the specifications outlined in (Hancock, 2000) have been provided by the RSPB[17] including recommendations for sourcing materials and methods of installation.

7.4 Installation Method and Maintenance

It is recommended that the raft is installed on a day with light winds and at least two maintenance visits are undertaken each year, one in March/ April and another in autumn. Full details on the installation methods of the raft are described in (RSPB, 2017)[17], as provided in Appendix D.

[17] RSPB (2017). *Black-throated Diver raft design and construction.* June 2017.

8 Success criteria and monitoring

8.1.1. All monitoring results will be reported in an annual monitoring report, for the first five years of monitoring. Following which the monitoring frequency and reporting frequency will be reviewed and updated requirements set based on the trajectory of restoration success.

8.1.2. The monitoring report will measure success against success indicators. If failing to meet objectives 'adaptive management' may need to be undertaken where restoration measures are assessed, and potentially enhanced or changed (Natural England, 2011b). This might involve additional channel blocking for example or changes to the deer management plan.

8.1.3. Monitoring will be undertaken by a suitably qualified ecologist.

8.2 Blanket bog restoration

8.2.1. To measure the effectiveness of the restoration works, the water table level (relative to the surface) and overall site water budget, will be measured using fixed dip wells (as detailed in Table 7.1). The baseline conditions of the water table will be established through monitoring before the restoration work commences, this HMP will be updated following completion of the baseline monitoring on the water table.

8.2.2. Field assessment of mitigation structures and reprofiled and/or revegetated areas will follow the Yorkshire Peat Partnership works monitoring form (as detailed in Conserving Bogs, the Management Handbook, 2019)[18]

[18] https://www.yppartnership.org.uk/sites/default/files/2019-09/Conserving%20Bogs%20The%20Management%20Handbook%202nd%20Edition.pdf [Accessed August 2023].

Table 8-1 – Monitoring requirements

Restoration Objective	Success Indicator	Monitoring	Frequency
1.1 Restore blanket bog hydrology and raise the water table.	Water table to remain within 0.05m and 0.1m of the bog surface for approximately 95% of the time (Lindsay, 2010).	a) Field assessment of mitigation structures (dams, bunds and/or baffles in channels and gullies) and fixed-point photography (IUCN, 2019). b) Fixed Dipwells, Automatic Water Level Recorders (AWLRs) and Automatic Barometric Pressure Recorder (ABPRs).	a) 6-monthly in first year; then annually for first 5 years. b) Monthly, for three months prior to restoration work to provide a baseline and then for 12 months following restoration. Revised timescale then to be set following first twelve months as appropriate. (Natural England, 2011a)
1.2 Increase the abundance and distribution of bog-moss (Sphagnum sp.) and other key bog species.	10% increase in priority blanket bog communities (M17, M19, M1, M2, M3) and a 10% decrease in blanket bog communities associated with peatland degradation (M15, M16, M20 and/ or M25) by 3 years post restoration.	Vegetation transects to measure percentage cover and composition.	a) Years 1, 3, 5, and 10 - within botanical survey season (April to September)
1.3 Reduce direct losses of CO_2 to the atmosphere from	a) Successful establishment of vegetation on bare peat areas and	Field assessment and fixed-point photography of reprofiled and/or	a) Years 1, 3, 5, and 10 - within botanical survey season (April to September)

peat oxidation in the long-term from bare peat areas.	reprofiled bare peat hags and banks. b) Reduced areas of bare peat.	revegetated areas (IUCN, 2019).	

8.3 Montane scrub planting

Table 8-2 – Montane planting success criteria

Objectives	Success indicators	Monitoring requirements[19]	Frequency
3.1 Increase the abundance and distribution of native tree and shrub species. 3.2 Provide connectivity to existing woodland areas. 3.3 Increase habitat structure and ecological value by planting in open and unplanted areas. 3.4 Suitable rocky locations for golden eagle perching/ roosting to be left unplanted.	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type.	Annual monitoring visit for the first five years (including a UKHab survey) to assess progress to objectives and identify requirement for remedial measures. Monitoring to include audit to check on implementation of management measures. From years 1- 5 the following variables should be measured. An assessment in each planting area of the number of plants still alive. Detailed sampling should take place on 10% of the trees planted. These trees should be tagged and GPS referenced to allow for repeat monitoring. The following should be recorded:	Year 1: full monitoring within the first year may not be possible as the plants may be too small and have made little growth during their initial growing season – however it is recommended monitoring visit is still undertaken to capture any failures. Years 2 – 5: annual monitoring visits. Monitoring to be undertaken during the same month each year when plants are in leaf.

[19] A full monitoring proforma will be developed following the guidance within the Protocol for monitoring planted montane willows – Best Practice Guidance 5: https://www.msag.org.uk/uploads/4/0/7/3/40732079/bpg5_monitoring.pdf [Accessed August 2023].

		- Assessment of dead/dying plants and the apparent reason; - Plant length; - Number of shoots on each plant; - Height and width; - Leaf number; - Leader or longest shoots length; - Catkins; - Stem diameter. From years 5-10 it will be impractical to count branches or leaves and therefore scrub populations should be scored in size categories. From year 10 onwards it is also important to record the sex of the plants and the production of fertile seeds. Check for natural regeneration around suitable open rocky locations which could be used by golden eagle.	After year 5 onwards, it may be possible to reduce the frequency to every 5 years.

8.4 Caledonian Woodland planting

The baseline conditions of vegetation of the planting areas will be collected at fixed point locations within the woodland planting area.

Table 8-3 - Monitoring Requirements and Frequency

Objectives	Success Indicator[20]	Monitoring requirement	Frequency
3.4 Increase the abundance and distribution of native tree and shrub species. 3.5 Provide connectivity to existing woodland areas. 3.6 Increase habitat structure and ecological value by planting in open and unplanted areas. 3.7 Provide suitable habitat/ food supply for black grouse.	No nutrient enrichment or damaged ground evident.	Annual monitoring visit for the first fifteen years (including a UKHab survey and Biodiversity Metric 3.1 condition assessment) to assess progress to objectives and identify requirement for remedial measures (to include new planting and any natural regeneration, and consideration on open ground). Species data to be collected at fixed point locations to record changes from baseline. Monitoring to	Annually for first five years following planting. Frequency to be set following first five years of survey, for next 10 years.
	No invasive non-native (INNS) species are present within the woodland.		
	There is no significant browsing damage evident within the woodland.		
	Tree mortality less than 10%, no pests or diseases and no crown dieback.		

[20] Objectives follow habitat definitions from UKHAB and Natural England (The Biodiversity Metric 4.0 (JP039) – Habitat Condition Assessment Sheets (2023).

Objectives	Success Indicator[20]	Monitoring requirement	Frequency
3.8 Maintain areas of open ground for golden eagle foraging.	50% of all survey plots within the woodland parcel have deadwood, such as standing deadwood, large dead branches and or stems, branch stubs and stumps, or an abundance of small cavities.	include audit to check on implementation of management measures. Check tree planting for any dead, diseased or dying specimens which should be replaced. Check for presence of INNS	
	Tree species to reach fruiting/ seeding age to provide a good source.		
	Open areas retained.		

8.5 Diver rafts

Table 8-4 – Diver raft success criteria

Objective	Success indicators	Monitoring requirements	Frequency
4. To increase availability of nesting sites for black throated divers.	Use of raft by black throated divers to successfully nest.	Annual visit in nesting season to monitor raft for signs of use by black throated divers.	Annually