



Starling Learning



Land at Low Drumclog Proposed Wind Farm Outline Habitat Management Plan

Carried out by



Starling Learning



22 Braehead
Lochwinnoch PA12 4AS
Tel. 01505 843849
starlinglearning@hotmail.co.uk

On behalf of

CleanEarth Energy Ltd

Land at Low Drumclog Wind Farm

Habitat Management Plan

Contents

1	Introduction	1
2	Aims and Broad Objectives of the HMP	3
3	Habitat Protection and Enhancement	5
4	Species Protection and Specific Habitat Enhancement	8
5	Implementation	12

Figures

Figure 1 – Area suitable for bog restoration

Appendices

Appendix 1 – Reptile hibernacula details

Appendix 2 – Timetable

1 Introduction

1.1 Project Overview

1.1.1 This Habitat Management Plan accompanies a planning application by the applicant CleanEarth Energy Ltd (CEEL) to South Lanarkshire Council for full planning permission to develop three turbines up to 180m tip height at Land at Low Drumclog, Strathaven, South Lanarkshire, ML10 6QE. This report has been commissioned in order to minimise any negative impacts on the ecology of the site and subsequently provide ecological enhancements as a result of the proposal.

1.1.2 The proposed wind farm has been surveyed from 2019 to 2021. A wide range of ecological and ornithological surveys have been carried out and an Environmental Impact Assessment completed, with mitigation measures proposed to ensure residual effects are minimal.

1.2 Objectives of the Habitat Management Plan

1.2.3 This HMP should be considered to be an Outline HMP (OHMP). It is proposed that this is a working document which will evolve following planning permission and discussions between the developers, the landowners, the Ecological Clerk of Works (ECoW) and organisations with responsibility for and an interest in key wildlife species such as the Biodiversity Officer at the Local Authority, Nature Scot and the RSPB. A final HMP will be agreed with these parties.

1.2.4 This OHMP has been prepared by Starling Learning on behalf of CleanEarth Energy.

1.2.1 This OHMP has been guided by the various ecological surveys carried out by Starling Learning and the hydrology report is intended to build on the information contained within the Environmental Impact Assessment Report (EIAR). It is also guided by the UK Post-2010 Biodiversity Framework, the Scottish Biodiversity List, and the South Lanarkshire Local Biodiversity Strategy.

1.2.5 The OHMP proposes enhancement measures to mitigate any potential adverse impacts of the development on the ecology and nature conservation interests of the site. This will primarily involve the protection of habitats and species, mitigation and the creation and enhancement of habitats to diversify and improve biodiversity and conditions of the existing habitats on site.

1.2.6 This OHMP includes the following key aspects:

- Details of protected habitats and species;
- Details of appropriate compensatory habitat creations;
- Protection of species and habitats;
- Suggested timings of the provision of proposals; and
- A programme of monitoring and reporting on the success of mitigation measures.

1.3 Background

1.3.1 Starling Learning has a comprehensive understanding of the ecological and ornithological conditions on site, following years of survey work.

1.3.2 An Extended Phase 1 Habitat Survey, in accordance with the Joint Nature Conservation Committee (JNCC) methodology 2005, was conducted and included searches for scarce or rare plants, assisted by the use of aerial photography.

1.3.3 An NVC survey was also carried out by Starling Learning in 2019 to 2020 which identified Groundwater Dependant Terrestrial Ecosystems (GWDTEs).

1.3.4 Ornithological surveys of the development area and access track were carried out by Starling Learning from 2019 to 2020.

1.3.5 Protected species surveys were also carried out by Starling Learning. Bats, Badger, Otter and Common Lizard were recorded within the survey area and measures are incorporated to protect these species and to improve their habitats.

1.3.6 These surveys revealed a number of significant habitats and species of conservation value that have the potential to be affected by the construction of a wind farm.

2 Aims and Broad Objectives of the HMP

2.1.1 The main aims and objectives are to:

- Examine ways to minimise disturbance and possible problems for key species;
- Examine how the ecological value of the site may be improved by changes in land management; and
- Increase overall biodiversity through management targeted at specific species.

2.2 Aim 1: To protect and enhance significant habitats

2.2.2 An Ecological Clerk of Works (ECoW) will be employed to ensure compliance with planning regulations and ensure protection of habitats and wildlife. This post will commence prior to the construction of the wind farm and will continue for the duration of the construction phase, during operation of the turbines and for the decommissioning phase, and will include the following:

- Ensure the implementation of the HMP;
- Visits to the site during key periods such as track setting out and turbine installation;
- Micro-siting of turbines in agreement with the local planning authority department to avoid key habitats or possible disturbance to wildlife;
- Ensuring that the work is completed without contravening the Wildlife and Countryside Act and generally monitoring the Habitat and Species Protection Plan;
- Progress will be reported on a regular basis to CleanEarth Energy Ltd, South Lanarkshire Council, the Landowners, and NatureScot with any suggested alterations required being agreed by these bodies;
- Planning officers will be invited to site to check implementation of the works;
- Liaising at all stages with CEEL and the landowners; and
- Ensuring post-construction monitoring takes place.

2.2.3 The habitats of significant conservation value and GWDTEs have generally been avoided, and where this is not possible, mitigation measures will be put in place. Good practice will be followed at all times in order to avoid pollution and damage to habitats.

2.2.4 Areas of bog habitat previously drained will undergo restoration.

2.3 Aim 2: To protect bird species and enhance bird habitats

- 2.3.1 Care will be taken to avoid disturbing all nesting birds.
- 2.3.2 Positive management will also improve the site, or off-site where possible, for various species including Barn Owl.

2.4 Aim 3: To protect and to enhance the site for protected species - In particular Badger, bat species, Common Lizard and amphibians

- 2.4.1 The area has a localised Badger population; setts will be protected.
- 2.4.2 Bats were recorded foraging in generally low numbers. Attracting bats to the area is not advisable due to the risk of collision with the turbines. However, the HMP aims to increase the number of bats using the adjacent farmland areas by increasing the scope for roosting.
- 2.4.3 Turbines will be located at a minimum distance of 50m from blade tip to the forest edges to reduce the risk of collision. Turbine 1 is located 100m, Turbine 2 is over 450m and Turbine 3 is over 150m away from the forest edge
- 2.4.4 Measures will be put in place to protect reptiles and amphibians and enhance habitats for them.

2.5 Aim 4: To protect watercourses and enhance bog habitats for freshwater invertebrates and amphibians

- 2.5.1 Robust measures will be put in place to protect the water environment.
- 2.5.2 The creation of ponds will enhance opportunities for amphibians and for invertebrates such as dragonflies.

3 Habitat Protection and Enhancement

3.1 Habitat Protection

- 3.1.1 The location of all infrastructure including turbine bases, tracks, borrow pits, site storage areas and temporary construction compounds have already been chosen to avoid and reduce impacts on the most important habitats and avoiding GWDTes. The direct impact of the development will be mitigated further by alterations through micro-siting to various turbine locations and the route taken by the access track.
- 3.1.2 Although the design of the infrastructure has avoided GWDTes, several wet communities require to be crossed by the access track. These communities grow on ground that is subject to periodic inundation or where there are near-surface flows. Prior to construction, the footprint of the wind farm will be walked by the ECoW with the site engineer and those wet communities will be identified. Discussions will take place to decide the best management methods to deal with inundated areas and surface water flows.
- 3.1.3 Robust surface water management measures including suitably sized attenuation ponds at each location, silt traps and silt nets will be put in place following good practice and these will be overseen by and agreed with the ECoW.
- 3.1.4 Construction phase potential impacts resulting from pollution by fuels, oil, servicing chemicals and leaching from cement will be avoided by the adoption of best working practices, choice of the most appropriate cement mix and design of servicing areas.
- 3.1.5 During construction, the working area will be kept to a minimum to avoid unnecessary peripheral habitat disturbance and the accumulation of unnecessary amounts of loose material that might be washed away during periods of heavy rain.
- 3.1.6 Good practice will be followed to design an effective drainage system to allow proper distribution of water to down slope areas. Where cut tracks are used these will have cross pipes inserted at suitable intervals to spread the supply of water.
- 3.1.7 Wherever necessary, floating tracks will be used to traverse mire habitats and where peat depth is 0.5m or deeper, thus allowing water to pass underneath the track, or through its lower layers. In keeping with good practice, there will be no trackside ditches where floating tracks are used.

- 3.1.8 Where flush habitat has to be crossed, an additional lower layer design will be used with perforated pipes spaced over the width of the flush and set within a matrix of open graded free draining material wrapped in separator geotextile.
- 3.1.9 Regular inspections will be made to check whether the drainage systems remain operating as intended. This should ensure a proper supply of water for sensitive communities.
- 3.1.10 Best practice will be employed during and after deep excavations for turbines and borrow pits. Settling ponds will be used to store excess water accumulating in the excavation areas and these will be in addition to other surface water mitigation measures. Clean filtered water from the settling ponds will be released in appropriate areas, maintaining water supply to downslope wetland communities. If appropriate, silt busters may be used instead of settling ponds to limit the impact on ecological habitats.
- 3.1.11 Turves with vegetation representative of the site from excavation works will be stored for use within the borrow pit as priority, where applicable this vegetation will also be used to dress the disturbed edges around the proposed infrastructure. A detailed assessment of this process is included within the Peat Management Plan. If required, topsoil from the excavated track can be used as an adequate alternative. This will prevent the erosion of loose soil and colonisation by undesirable plant species. The turves will be stored separately from the peat and topsoil. The ECoW will assess and determine the most appropriate methods to be used when onsite.

3.2 Habitat Enhancement

- 3.2.1 Habitat enhancement will aim to improve the condition of the bog complex. The habitats have been subject to much drainage and grazing for many years. Much of the E1.6.1 blanket bog in the area has been slowly converted to poorer quality E1.8 dry modified bog. The dry modified bog has been identified as having the potential for recovery and would respond to a programme of grip-blocking and a reduction in grazing pressure. This will consist of grip blocking, and pool excavation. Peat dams will be implemented to block the ditches using peat from an in-situ area and small ponds created where this peat has been displaced. The peat excavated from the turbine bases will be deposited back into this area and within the borrow pit located on site, extending the peat habitat. A full detail of the peat assessment and works is provided within the Peat Management Plan (PMP).
- 3.2.2 There are a large number of moor grips, some of which are currently draining the bog. Locations of these drains and the area identified for restoration is included within the Drain

Survey and Blocking report located within Appendix H of the Environmental Statement. Although much of the bog habitat is in good condition, there is scope for significant improvement. Rewetting the bog will lead to sphagnum increases and the active layer will produce deeper peat. The proposed development will result in the loss of approximately 2.38 ha of E1.6.1 blanket bog and 0.8 ha of E1.7 wet modified bog, a total of 3.18 ha. An area covering 4.5 ha has been identified as a suitable size for bog restoration and this is indicated within Figure 1 of this report. The western area proposed for moor grip blocking is located within both blanket bog and wet modified bog. This will improve the existing blanket habitat onsite and subsequently restore areas of wet modified, with the aim of extending the blanket bog habitat

- 3.2.3 The area for restoration is an area of degraded blanket bog (M17-M25a and M17-M20b) extending west into an area of wet modified bog (M25a to M17, M20b – M25a and M25a to M20b). As well as increasing the sphagnum, other bog plants will benefit.
- 3.2.4 Invertebrates and amphibians will subsequently benefit from this restoration.
- 3.2.5 Small ponds will also be created along the line of some of the moor grips to further enhance the site for amphibians and invertebrates. Attenuation ponds for the trapping of silt will be left in situ following construction of the wind farm. All ponds will have gently sloping sides in order to be wildlife friendly.

4 Species Protection and Specific Habitat Enhancement

4.1 Birds

- 4.1.1 Any disturbance to nesting birds will be avoided, by ensuring that all ground clearance (stripping of vegetation) will be undertaken outside the bird breeding season (from March to August inclusive) to remove any suitable nesting habitat. Should any ground clearance or felling work be required during the breeding season this will be kept to an absolute minimum and a nest check survey will be carried out by a competent ornithologist prior to any works.
- 4.1.2 The ECoW will ensure that measures are put in place should nests be discovered to ensure no further disturbance to nesting birds. For example, the area with the nest will be avoided until the birds have fledged, this will be monitored by the ECoW. Buffer zones will be implemented around the nest, the size of which will be determined by the bird species.
- 4.1.3 Displacement to breeding birds will mainly be temporary and outside the breeding season. Improvements suggested within the HMP will ensure any permanent displacement is insignificant.
- 4.1.4 The turbines, access tracks and ancillary structures will avoid habitats of bird significance as far as possible. Any micro-siting will be agreed with the ECoW

Barn Owl

- 4.1.5 Barn owl nest boxes will be erected at two locations which are a minimum of 2km from the turbines.

Other Species

- 4.1.6 Many of the fields containing and adjacent to the access track are very wet and have dense Soft Rush. One field will be selected for severe rush cutting in winter and a wader scrape dug in order to attract breeding Lapwing. This will be located at sufficient distance from the turbines to avoid collision risk. If successful, rush cutting will take place each winter and the scrape maintained for the duration of the wind farm.
- 4.1.7 A variety of other nest boxes, including kestrel, will be erected at adjacent farms and maintained for the duration of the wind farm.

- 4.1.8 The flock of golden plover have the potential to be displaced in winter during construction. These will be carefully monitored by the ECoW, their roost locations noted, and attempts made to minimise disturbance.

4.2 Protected Species

Bats

- 4.2.1 Several trees along the access track have potential bat roost features (PRFs). These trees can be avoided, however if felling or lopping is required, bat surveys will take place prior to tree works taking place. Felling or lopping will take place during winter months to minimise the risk of disturbance to roosting bats or nesting birds.
- 4.2.2 To minimise the potential for disturbance to bats during the construction process, ground clearance along the woodland edge will be undertaken in winter or early spring when bats are likely to be less active. If construction works are undertaken during the active season for bats, construction activities will be limited to daylight hours and no work is undertaken at dawn or dusk near to preferred foraging areas for bats. This would limit the potential for disturbance to bats by avoiding the need for night-time lighting on the construction site, which could deter foraging around the site. It would also attract moths to the lights encouraging bats to feed around them.
- 4.2.3 To minimise the potential for collision, turbines will be placed a minimum distance of 50m from the tip of the blade to the forest edge.
- 4.1.9 Bat boxes will be erected in suitable locations such as farmhouses and in woodland at a minimum distance of 2km from the turbines. These will be made of postcrete and not wood as they are longer lasting.

Otters

- 4.1.10 No protected otter structure was recorded within 250m of the development. A pre-construction survey for otters will also be carried out to determine the current status of otters on the site at that time and ensure that, if there has been any recent change in otter activity around the site, any necessary mitigation measures which have been proposed, can be implemented.
- 4.1.11 The ECoW, in liaison with the construction engineers, will ensure the location of the access tracks and structures are more than 30m from any holts or lie-ups if discovered (100m for a

breeding holt), and a strict precautionary method of working will be set in place by the ECoW. This may necessitate an application for a European Protected Species Licence (EPSL) from Nature Scot prior to any works being carried out.

- 4.1.12 Any scrub woodland or other dense vegetation, beside watercourses, will be retained to provide suitable cover for lie-up areas and facilitate movement of otters through the site. Site contractors will be informed of any sensitive areas to ensure no accidental disturbance to holts or resting places.
- 4.1.13 If culverts or piping are to be stored on site, these will be capped to avoid entrapment of otters inside. In addition, any excavations over 0.5m deep, such as turbine bases or borrow pits, will be covered over at night or ramped on one side to ensure otters (and other animals) can escape if they fall in. Temporary fencing will also be installed around these excavations to avoid animals falling in.
- 4.1.14 Strict pollution prevention measures will be implemented to ensure no impacts to water quality, which could have indirect impacts on the otter population. This will include standard good practice measures to control silt levels, oil and fuel spills. A Water Monitoring Plan will be produced which will include baseline monitoring, monthly construction monitoring with lab analysis, daily checks by construction staff and ECoW and post construction monitoring.

Fish

- 4.1.15 Robust surface water management measures will be put in place following good practice and overseen by the ECoW. Water quality monitoring will take place. All infrastructure will be located a minimum of 50m from any watercourse. Any necessary culverts and bridges will be designed to allow fish passage at all times and their construction agreed with the ECoW and SEPA.
- 4.1.16 Any in-stream construction procedures will be discussed with SEPA prior to works commencing.

Badgers

- 4.1.17 No Badger setts have been located within 100m of the development. A pre-construction check will be made across the site to check on existing sett locations and to search for any newly excavated Badger setts or any not located during the original survey, which could be impacted by the construction. There are several areas where Badger evidence was located such as the latrine to the west of Greenfield Farm, checks will be completed in these areas.

Disturbance will be avoided during the breeding season (1st December to 30th June) by the implementation of buffer zones of 100 m around each known sett, 30m for non-breeding setts. These buffer zones will be set up by the ECoW on site who will monitor Badger use of the site during construction, to further assess the disturbance impacts associated with construction and advise construction workers if any changes are necessary. Setts within 100m of a borrow pit will require a license from Nature Scot and excavation of the borrow pit will not take place during the breeding period between December and June. Exclusion of Badgers from setts will not be considered unless it is absolutely necessary.

Reptiles

- 4.1.18 During spring and summer, the site will be checked for reptiles immediately prior to each stage of the work, and then it may be necessary to translocate reptiles from the development area. Although, the only reptile recorded was common lizards and they were only occasionally recorded.
- 4.1.19 Carrying out ground clearance within the spring and summer months will minimise disturbance to reptiles. However, there is the possibility of disturbing hibernating reptiles. Any suitable hibernaculums that require to be removed for construction, such as stone walls, will be de-constructed in July (post breeding and prior to hibernation). This will be overseen by the ECoW. A hibernaculum will be constructed on site in an area to the north at approximately NS 63100 41100. An example is shown in Appendix 1.

Amphibians

- 4.1.20 As with reptiles, avoiding ground clearance in spring and summer will minimise disturbance to amphibians. Strict pollution measures during construction will also minimise the risk of pollution to wet areas and ponds.
- 4.1.21 Habitat enhancement for amphibians will also take place including creation of wildlife friendly attenuation ponds for construction which will be left on site following completion of construction. It will be ensured these have shallow sides and will be suitable for use by amphibians.

5 Implementation

5.1.1 The majority of the work will be implemented by CEEL, in conjunction with the landowners. Ecological Contractors will also be employed to carry out various aspects of the conservation management.

5.1.2 All habitat management will commence within three months of generation. An approximate timetable is provided within Appendix 2.

5.2 Monitoring and Reporting

5.2.1 An Ecological Clerk of Works (ECoW) will be appointed to monitor the progress of the HMP and to ensure habitat and species protection. The ECoW's role will also include responsibility for advising on any practical ecological issues that may arise and, where necessary, make recommendations where changes to the HMP may be required.

5.2.2 Pre-construction surveys will be carried out close to the commencement of the building of the wind farm to check existing and any new setts, holts or other protected structures.

5.3 Post-Construction Monitoring

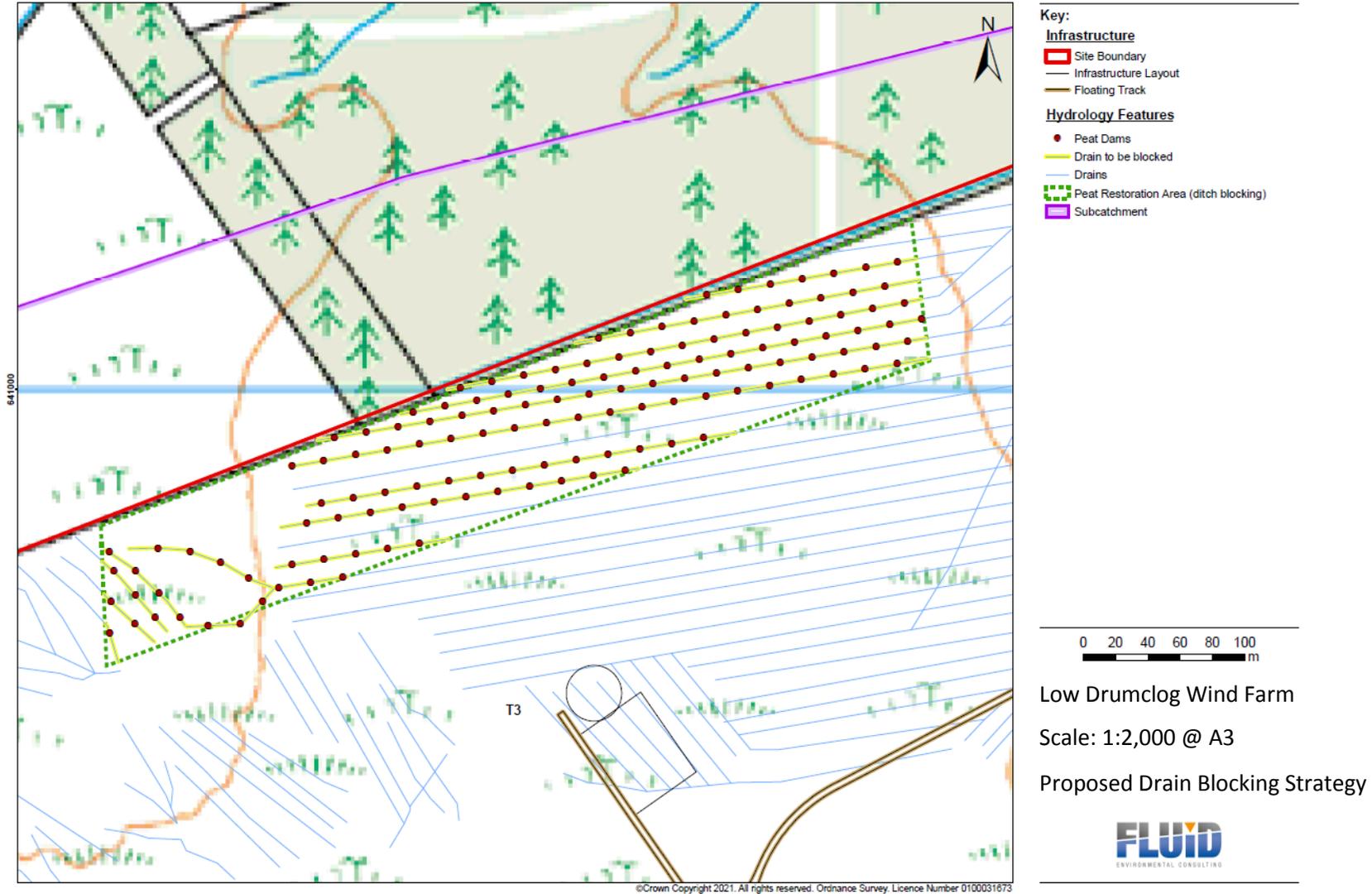
5.3.1 Post construction monitoring will be undertaken to assess the status of habitats, birds, and protected species within the wind farm site and also in the various areas where mitigation has taken place. If necessary, a prescription of measures would be put in place in order to reduce any negative impacts of the wind farm.

5.3.2 Birds will be monitored during construction, one year following the completion of the works and again when operational at a level agreed with Nature Scot and again during decommissioning. A report will be submitted to South Lanarkshire Council and NatureScot regarding their status. The status will be discussed, and should management need to be changed, discussions will take place and the management plan revised accordingly.

5.3.3 For mammals, surveys will be completed within the first year of the operational phase which will monitor their status and progress. The level of assessment will be agreed with NatureScot and the same process will be completed during decommissioning. Amendments to habitat management will be made if deemed necessary.

5.3.4 Habitats will be monitored following HMP enhancements. Results of the monitoring will be documented within reports, completed after each year.

Figure 1. Potential area for bog restoration



Appendix 1. Common Lizard hibernaculum

A 50cm base will be dug out and lined with sand and gravel. The hole will be filled with rocks and logs and brash piled on top. This will create nooks and crannies for common lizards. Soil and turf from the excavation will be piled on top for insulation. Gaps will be left for reptiles to enter and leave. The hibernaculum would be constructed using local materials



Appendix 2. Timetable

Prescription Summary	Prior to construction	During construction	Following construction	Regularly
ECoW in place, discussing construction with contractors	✓	✓	✓	✓
Habitat and species protection	✓	✓	✓	✓
Nest boxes and bat boxes erected			Commence within 1 year of completion of construction	Replaced if necessary
Bog enhancement		Areas agreed for bog enhancement	Will commence within one year following construction	
Hibernaculum for reptiles			Within one year following construction	
Ponds for amphibians		✓	Maintained post construction	
Assessment of HMP				✓
Monitoring	✓	✓	✓	✓