APPENDIX 17

FURTHER GUIDANCE ON RESTORATION

Planning Construction Works

In planning the detailed construction works seek to avoid intrusive work wherever possible - there will be less restoration required once construction is finished.

Seek to:

1. Follow natural contours and avoid cut and fill where possible when designing tracks.
2. Avoid major earthworks wherever possible.
3. Retain natural features such as rocky outcrops wherever possible to aid in successful restoration.
4. Avoid loss of mature trees wherever possible; for example, remove young regenerating birch in preference to mature trees which may have biodiversity and landscape value and will give structure to the finished works.
5. Site tracks round groups of trees where possible to leave natural features rather than dissecting groups/copses which again will reduce the necessary restoration works.
6. Plan to coppice and pollard trees rather than remove where possible.
7. Seek to leave seed bearing trees as seed source which will promote natural regeneration.
8. When crossing hedges or walls plan to use gaps to avoid having to re-instate.
9. Where possible plan to push trees over which require to be removed and leave on site (unless not considered appropriate by the SPT Environmental Management Team) which will help naturalise the area which is disturbed and promote biodiversity.
10. Take account of archaeological resources and seek to avoid.
11. Conserve informal and formal tracks and paths to avoid unnecessary intrusion.
12. Choose the narrowest section possible where crossings of wet heath cannot be avoided because restoration is difficult in such areas and follow appropriate guidance in CPH (see Section 7).
13. Design any permanent drainage ditches to be as natural as possible (not too straight and engineered but with varied banks and alignments etc).
14. Design drainage measures carefully to avoid unnecessary long term effects on adjacent habitats which could be difficult to restore.
15. Plan all site activities to reduce the need for vehicle movements to the minimum necessary for safe implementation of the works which will help in final restoration by minimising compression etc.
16. Design permanent access tracks carefully to ensure best fit with the landscape and local landform in the longer term.

Planning Restoration

Restoration at the end of the works will always be more successful if planned in advance.

Always:

1. Ensure that detailed restoration plans take account of specific habitat types and locations.
2. Plan to meet the challenges of restoration in higher exposed locations.
3. Plan restoration in advance of working on-site - this will save time and money at a later stage and will ensure that opportunities are not lost and a more successful outcome is achieved.
4. Identify where soils, peat and turfs will be stored in conjunction with the Technical Specialist and Contractor's Environmental staff.
5. Discuss restoration proposals with the SPT Environmental Management Team and plan with help from the Ecological Clerk of Works and Landscape Architect.
6. Take account of all agreements including landscape and forest design plans included in the CPH (see Appendix 10).
7. Ensure that the planned restoration will meet landowner/occupier requirements and all agreements made with them.
8. Take account of all environmental interests, for example, seek to enhance local biodiversity but not by planting on sensitive archaeological or geological sites.
9. Choose planting mixes with advice from the project Landscape Architect and Ecological Clerk of Works (seeding and planting). Be aware that different mixes may be required in quite close locations and in some areas natural regeneration may be preferred to seeding.
10. Remember different seed mixes will give different colour in the final design - seek to avoid creating 'stripes'.
11. Plan how monitoring of restoration will be undertaken and by whom and when.
12. Plan restoration taking account of run-off erosion risks on steep slops in poor conditions; be aware of the potential for sediment rich run-off to smother sensitive or newly established communities in poor weather conditions and seek to curtail this.
13. If there is insufficient plant materials available in any location to act as a seed source discuss the potential to use plugs form adjacent habitats with SNH. Do not use without necessary permissions.

Early Works

Some early works will help in achieving more successful final restoration. These include the following:

1. Always take photographs of the site before works start to guide later restoration including of any drainage that will be disturbed.
2. Strip turfs and vegetation carefully and use in temporary works to prevent erosion and use in restoration of the final works where possible.
3. Turfs can be stored successfully in cut-off ditches in some locations which can aid attenuation and prevent turfs/vegetation from drying out.
4. Store top soil and subsoil separately according to best practice (see GEMP 9).
5. Plan to avoid storing soils on wet ground if possible.

6. Store stripped materials in immediate location or as close as feasible for future re-use in site restoration as close as possible to the location from which they were removed from.
7. Keep a record of where all soils and turfs are stored.
8. Remove large boulders (rather than cover) to replace in restoration works.
9. Remove noxious weeds in accordance with best practice. Do not allow unnecessary spread or this will compromise the success of final restoration works (see also GEMPs 16 and 17).
10. Seek to avoid compression of soils as much as possible – otherwise on restoration drainage may become impeded and may result in extensive rush areas being created.
11. Seek to minimise the risk of compaction when constructing floating roads by using suitably graded geotextiles and geofabrics to spread the weight of the track.
12. Micrositing tracks to avoid any particularly wet areas of peat.
13. Using appropriate drainage techniques to maintain the natural hydrology of the peat.
14. During construction seek to avoid creating eroded areas which can be difficult to restore successfully.

Final Restoration

At the end of construction in any area or after dismantling of the old 132kV line the site must be restored carefully and sympathetically taking account of all required mitigation and of the consent conditions (see Appendices 3 and 4).

The following principles should also be adopted where appropriate:

General

1. Undertake restoration works in suitable weather conditions - wet ground conditions can be difficult as can hot dry and windy spells.
2. Restoration should ensure the successful integration of the site with surrounding landuses and habitats.
3. Natural regeneration of habitats should be promoted in all appropriate areas as advised by the Ecological Clerk of Works.
4. Opportunities to deliver local biodiversity enhancements should be identified and implemented at suitable sites identified by the Ecological Clerk of Works and Landscape Architect.
5. Any required replanting and /or reseeding should be undertaken at appropriate times of the year and with the agreement of landowners/occupiers.
6. Tree brashings can be used to make shelters and protect planting from browsing animals and provide shelter.
7. Always replace removed peat and mineral soils in the same order as removed when restoring any site.
8. Restoration plans in areas used for public access should take account of access requirements and ensure that new planting does not interfere with access and also delivers visual benefits where possible.
9. Identify the most appropriate machinery to use for restoration in any area (small digger or large machine etc) according to the sensitivity of the habitats and the extent of areas to be restored (take advice from the Ecological Clerk of Works).
10. Undertake small sections of the site for restoration and monitor success with input from the SPT Environmental Management Team before restoring large areas.

Access Tracks

1. Carefully remove all stone and geotextiles used in temporary works and return to the site from where it was sourced or dispose of off-site or keep for re-use wherever possible.
2. Where floating stone access tracks have been used an indentation as a result of the compaction and settling from the stone installation may be left. Following removal, the line of the tracks should be allowed to revegetate naturally to reduce the risk of impact from further intrusive machinery.
3. Where tracks have been dug in and are removed the land should be gently graded back to fit with the surrounding topography.
4. Only rip areas if advised to do so by the Ecological Clerk of Works or Landscape Architect. Do not rip or spike the surfaces of bogs and wet heaths.
5. Seek to stabilise slopes as quickly as possible.
6. Re-instate soils and seed banks as soon as practical.
7. In recreating slopes once the required engineering slope is achieved, vary gradients (at large 'readable' scale) with 'scoops and bumps', undulating crests of slopes and scalloped toes taking cues from surrounding landform and advice from the project landscape architect.
8. Avoid creating steep benches in any permanent earthworks as these will be difficult to restore and bare faces may remain.
9. Replace any boulders which have been removed following their natural orientation with lichens and mosses exposed.
10. Use stored materials to restore tracks.
11. When lifting turfs to use in restoration, only lift on the day they are to be replaced to avoid unnecessary stress and risk of drying out.
12. Cut large turfs and place on areas to be restored creating lumps and bumps which mimic the surrounding landform.
13. At high altitudes or in exposed situations, small turfs will be more suitable.
14. Take particular care to place these so that they cannot be lifted by wind - bed turfs in carefully. If turfs can be placed in locations such as in the lee of rocks these will provide shelter and aid successful restoration.
15. Pay particular attention to the tie-in of curves with the surrounding landform to help prevent erosion.
16. Re-instate any stone walls, hedges and fence lines which have been affected by the works.
17. Take opportunities to enhance biodiversity if re-instating hedges etc, with advice from the Ecological Clerk of Works.
18. Ensure ends of pipes and culverts are carefully finished off and no unnecessary plastics etc left exposed or protruding.
19. Ensure all exposed concrete is covered if possible and the final works 'naturalised'.
20. Seek to ensure naturally occurring features such as scree slopes are continued over restored adjacent areas.

Tower Sites

1. At tower sites topsoil from each working area will have been stored within the working area for each tower in bunds approximately 2m in height at the boundary of the working area. Subsoil removed to enable construction of the foundations will be temporarily stockpiled in separate bunds within the working area.

2. The foundations of each tower should be backfilled with the excavated materials which should be replaced and compacted in layers. Any surplus material should be graded around the working area prior to replacing and regrading the topsoil.
3. Any soils which are removed and that are not classified as having a good consolidated structure should not be used for backfilling and these and any contaminated materials should be removed to a suitably licensed facility.
4. Each tower site should be allowed to revegetate naturally relying on the seedbank in the replaced soils and any stored turfs.

Restoration of the 132kV Line

1. Follow the principles described above for restoration of tracks and tower sites.
2. It is unlikely that significant remedial work will be required to restore areas of temporary track since it is the intention to use temporary matting wherever possible and only the minimum amount of tracking by machinery will be permitted to allow safe dismantling of the line.
3. Tower sites in agricultural areas should be restored and incorporated back into the surrounding landuse type (pasture or arable).
4. In arable areas some additional topsoil may be required to achieve successful restoration and this may have to be imported if necessary - take advice from the SPT Environmental Management Team.
5. In areas of bog and heath sites should be carefully restored and natural regeneration encouraged.
6. In woodland areas take guidance from the project forestry expert and agree restoration proposals with landowners/occupiers.

Construction Compounds

1. Construction compounds should all be made good at the end of construction with all buildings and materials removed and soils appropriately restored.
2. Undertake any planting and/or seeding as instructed by the project landscape architect.

SP TRANSMISSION

FURTHER INFORMATION FOR LANDSCAPING

1 LANDSCAPE CHARACTER

1.1.1 Information on the landscape character of the different parts of the route of the proposed overhead line is provided within the Beauly Denny Environmental Statement, Chapter 23, and in Technical Annexes 23.1 and 23.2.

1.1.2 This information has been summarised in tabular form for each of the areas or locations identified as 'sensitive', in order that the mitigation measures build on this information and are both suitable and appropriate for the specific areas concerned.

2 USE OF INDIGENOUS SPECIES

2.1.1 It is important that the landscape mitigation makes use of tree and shrub / scrub / hedgerow species that are indigenous to, and typical of the area concerned, in order that these measures can eventually 'blend in' with the wider landscape.

2.1.2 Species that are typical to the different parts of the area between Wharry Burn and Denny Substation are indicated in Table 1, below.

2.1.3 Proposals for planting will reflect these basic species wherever possible, unless the objectives for the site or area clearly state that other forms of planting would be more appropriate.

Table 1: Typical Native Planting Species Mixes - Beauly to Denny

Route Section	Drift Geology*	NVC Woodland Type **	Main Tree Species	Main Shrub Species
TD181 – TD189	Glacial till	W17	Sessile oak Silver birch Rowan	Hawthorn
TD189 – TD202/1	Limited drift cover (incl. peat, glacial till, sands & gravels)	W10 ≠	Sessile oak Silver birch Ash Rowan	Hawthorn Blackthorn
TD202/1 – TD245	Alluvium & sands and gravels	W8 ≠	Sessile oak Silver birch	Hawthorn Hazel Blackthorn
TD245 – TD248	Glacial till	W8 ≠	Ash Sessile oak Silver birch	Hawthorn Hazel Blackthorn

Source of drift geology information: Beauly Denny Environmental Statement, Figures 20.1A – 20.1C
** NVC woodland type information taken from The Forestry Authority Bulletin 112, Creating New Native Woodlands (Rodwell & Patterson, 1994)
≠ W8, W10 and W16 are NVC woodland types found at the edge of the Beauly Denny area; confirmation will be required on site that these are the most appropriate native vegetation types for the area concerned

NOTES FOR TABLE 1

1. The selection of tree and/or shrub species for each planting area will need to consider the specific ground and climatic conditions at each site, in order to ensure that the planting is appropriate for the location. Not all (or any) of the species listed above, or in the FC Bulletin 112, may be appropriate in every instance.
2. Hedgerow planting to reflect species typical of the area concerned.
3. Additional native tree species to be added to planting mixes to reflect the tree cover typical to an area, e.g. oak and beech trees in the area south of Plean.
4. Evergreen species e.g. Scots pine, holly to be included where visual screening is an objective of the planting proposals.

3 KEY LANDSCAPE CHARACTERISTICS AND DEFINING FEATURES

3.1.1 The following provides a brief description of the key characteristics of the landscape between Wharry Burn and Denny Substation, together with any defining features of this landscape. It is anticipated that this will assist the contractor in his general awareness of the landscape as an important component of the overall environment, and in the protection of important features. However this information does not purport to be a fully comprehensive schedule for the route and the contractor should be aware that there will be local features that are not described below, but that will be of equal importance to the landscape of an area. These may include hard landscape features such as stone dykes, in addition to any existing planting.

3.1.2 The landscape characteristics within this Stirling and Falkirk section of the proposed route are more typical of lowland Scotland, though with forestry plantations located on areas of higher ground, and areas of upland moorland. Some small estates (such as Glassingall) have policy woodlands, in addition to the larger estates such as at Airthrey Castle. Species are more varied as a result of the generally better soils and less severe climate in this part of the route.

3.1.3 Within the section of the Wharry Burn that is crossed by the proposed overhead line, there is a small tree-lined waterfall and rock pool; this forms an unusual feature within the local landscape, which is otherwise relatively bland. It will be important to avoid any disturbance to this feature during the construction of the proposed line, and the dismantling of the existing 132kV line in this area.

3.1.4 Mature roadside trees (such as in the vicinity of the path leading to the Cocksburn reservoir) are to be retained wherever possible, subject to their health.

3.1.5 Hedgerows are a more frequent feature of the more lowland areas of landscape, particularly around Logie, Steuarthall and Plean.