Technical Annex 22.16: Construction Methodology within Identified Special Study Areas

22.16 Introduction

22.16.1.1 The following provides a construction method statement for Special Study areas, and has been prepared by Balfour Beatty Power Networks.

22.16.1.2 The routeing of the new overhead line passes over various sites identified and designated as special sites. In particular, construction of the new line and dismantling of the existing would encompass construction over and working in proximity to both Ramsar, Special Area of Conservation (SACs) and Special Protection Areas (SPAs).

22.16.1.3 Because of the sensitivities of such sites, detailed consideration has been given to the necessary construction works within each of these areas to identify robust mitigation measures to protect the interests of these sites during construction and dismantling. Specific details for associated diversion works have not been fully addressed at this time.

22.16.1.4 The special study areas covered by this method statement are as follows:

- Inner Moray Firth Ramsar and SPA (River Beauly);
- River Moriston SAC;
- River Spey SAC;
- River Tay SAC (Including River Errochty, River Almond, River Tummel and River Tay);
- Ness Woods SAC; and
- Drumochter Hills SAC and SPA.

22.16.2 Construction Procedures

22.16.2.1 The construction of the new overhead line and dismantling of the existing line would follow similar procedures for all sites that form part of the Natura 2000 network. The following procedures detail the general methods that would be followed and specific details for each individual site.

General Procedures

22.16.2.2 Everyone working on the project would attend a site induction prior to commencing activities on site. This includes everyone who comes onto the working site including contractors, client representatives and other visitors who may regularly attend site. The induction sets out the required procedures and methods to be followed to allow the execution of the project in a safe and controlled manner. All procedures would be documented in the Construction Procedures Handbook that would be available on site.

22.16.2.3 Prior to commencing any site works, the site working areas would be fenced off to ensure construction plant, equipment and personnel stay within the working area, away from the designated sites.
22.16.2.6 No fuels or chemicals would be stored on site. All fuels would be stored in a suitably bunded container within the main construction compounds. When refuelling is necessary, the minimum required fuel would be transported to site and the plant or equipment refuelled in a controlled manner. A refuelling point would be suitably placed on site and agreed during the pre-construction meeting.

22.16.2.7 Emergency spill kits would be readily available on site and everyone trained in their correct use.

22.16.2.8 Drip trays would be used for all stationary plant and equipment on site to prevent leakage into the soils. These would be regularly checked and emptied to an appropriate waste storage area and disposed of to a suitably licensed facility.

22.16.2.9 A closed skip or container would be present on site at all times during construction works to ensure all waste materials and packaging can be secured away from the watercourses.

22.16.2.10 A security system would be put in place to prevent any localised vandalism or damage to plant, equipment or the works in proximity to the watercourses.

Provision of Access to Site

22.16.2.11 The design and routeing of accesses to tower positions has developed during the production of the Environmental Statement allowing considerations from various bodies and consultees to be incorporated into the design. This has led to the development of an access strategy that would be incorporated into the Construction Procedures Handbook forming a decision model to be used in determining what type and design of access track would be installed and the constraints applicable to it. The Construction Procedures Handbook would be collated after consent but prior to construction on site and made available to key consultees and landowners if required.

22.16.2.12 It has been recognised that where access is required in these very sensitive areas, minimal disturbance is a key objective. Providing the ground is relatively level and dry, temporary matting would be used for access complemented by making best use of helicopters where possible. Where the ground is very dry, no formal track would be constructed and low ground pressure vehicles would be used where possible along with helicopters (where this would not cause significant disturbance). Within these areas formal access is required to section towers for conductor stringing. Where possible, this would be temporary matting on dry level ground, however, stone track would be required on undulating ground or in wet ground conditions.

Access Considerations

22.16.2.13 New access tracks would be avoided wherever possible and best use made of existing roads and tracks.

22.16.2.14 New tracks would be routed to avoid sensitive areas where possible. Where sensitive areas cannot be avoided, the track lengths would be kept to the minimum required to allow the safe construction of the overhead line.

22.16.2.15 Within sensitive areas, tracks would be designed to minimise the need for excavation by means of an ‘overlay’ track design utilising either protective geotextiles with aggregate or temporary matting.

22.16.2.16 Construction of permanent roads within Natura sites has been avoided where possible.

Construction of Tower Foundations

22.16.2.17 It is recognised that there can be particular difficulties routeing the new overhead line over watercourses and in the protected sites particular attention has been given to tower positioning within these areas. Details of specific tower positions are shown on the attached figures showing dimensions to the protected watercourses.
22.16.2.18 The plant (tracked excavator) for foundation excavation would be delivered to site using a low loader and off loaded at the site entrance. Equipment and materials would be delivered using a 4x4 Hiab Lorry.

22.16.2.19 The excavations for each of the four tower legs are typically 4 metres square by 4 metres deep for the suspension towers, increasing up to approximately 5 metres square by 5 metres deep for the tension towers.

22.16.2.20 Should a need arise for dewatering the foundation excavation, no water would be pumped or allowed to flow directly into a river, stream or surface water drain. Where dewatering is required, a site-specific plan shall be produced and reviewed by SEPA. This shall be in accordance with and refer to SEPA guidelines PPG1 – General guide to the prevention of pollution & PPG5 – Works in, near or liable to affect watercourses. Once approved, the site plan shall be appended to the Construction Procedures Handbook.

Concrete Works

22.16.2.21 Once the holes have been excavated, the tower leg would then be fixed in accordance with the foundation design using a template prior to assembling the ‘pyramid’ formwork around the stub. The foundation would then be concreted.

22.16.2.22 Concrete would be calculated by volume in advance and suitable amounts delivered direct to the tower positions by a ready-mix lorry.

22.16.2.23 Following the delivery of concrete, the ready-mix lorry would return to depot or construction compound to be washed out. No wash out would be permitted on site. The following summarises the measures proposed to prevent damage to the designated sites:

- No concrete washout would be permitted on site;
- Dewatering of excavations would be directed away from watercourses;
- No concrete transfers would be undertaken on site; and
- Vehicles and plant would be restricted to the immediate safe working area around the tower positions.

Backfilling

22.16.2.24 After a minimum of 24 hours to allow the concrete to partially cure, the formwork can be removed and the excavation backfilled and compacted. Once the excavation is backfilled, any surplus material would be removed and disposed of in accordance to waste regulations.

Tower Construction

Steelwork Delivery

22.16.2.25 Steelwork for the towers would be delivered directly to site by lorry and unloaded using a 25t All Terrain crane. After unloading, the steelwork would be arranged to allow independent sections to be assembled in their final position prior to erection in accordance to the site-lifting plan included in the Construction Procedures Handbook.

Tower Erection

22.16.2.26 The assembled tower sections would be erected using an 80t All Terrain crane. The crane would be driven directly to site and positioned in accordance to the site-lifting plan. In general, the positioning of the crane and part assembled tower would be arranged on the opposite side of the final tower position from any protected crossing. The site would be arranged so that no lifts need to be manoeuvred directly over the watercourses.

Conductor Stringing

22.16.2.27 An aboricultural assessment would be conducted within all wooded areas that the proposed new overhead line crosses to check for compliance with minimum statutory clearances. The assessment would detail where tree felling or lopping would be required to maintain clearance.
Specific details following assessment shall be appended to the Construction Procedures Handbook.

**Watercourse Crossings**

22.16.2.28 When all towers within the section are erected, stringing of the conductor can commence. The positions for the heavy plant required to string the conductors have been selected to avoid setting the equipment within areas of the Natura 2000 designated watercourses crossings. The plant would be set up at each end of the sections out with these sites.

22.16.2.29 The insulators and running out equipment necessary for stringing the conductors would be taken to site utilising a 4x4 Hiab Lorry for each tower.

22.16.2.30 Once each tower has been prepared for stringing, the pilot wires required to pull the conductors through the section would be flown between the stringing positions and across any watercourse. This would allow the pilot wires to be landed into rollers at the top of the towers without the wires coming into contact with any watercourse. The pilot wires would then be secured to the stringing equipment set up at the stringing positions and appropriately tensioned.

22.16.2.31 To avoid the construction of scaffold protection at the edges of watercourses, a special Catenary Support System (CSS) would be used to protect the watercourses whilst conductor stringing is taking place. The CSS method involves deploying a motorised tug unit along the pilot wire whilst pulling along a support wire and catenary blocks. The support wire is secured on the towers either side of the watercourses and the blocks provide a secure support whilst pulling through the new conductor.

22.16.2.32 With the CSS system in place all phase conductors and the earthwire can be pulled through and secured in their final position. Once the conductors have been secured the CSS equipment can be retrieved in a similar method to the installation.

22.16.2.33 Specific details of the CSS system are appended.

22.16.2.34 The CSS ensures that the new conductors do not come into contact with the watercourses at any time.

**Drumochter Hills**

22.16.2.35 Initially, the insulators and running out equipment necessary for stringing the conductors, would be taken to site utilising a 4x4 Hiab Lorry along the access route.

22.16.2.36 The remaining heavy plant and equipment including heavy towing tractors, 15 tonne winches & 20 tonne tensioners, pilot reels and conductor drums required at the winch positions would be delivered along the accesses using a mixture of low-loaders and 4x4/6x6 Hiab Lorries.

22.16.2.37 The winch is positioned and set up at the section tower at one end of the section with the tensioner set up similarly at the section tower at the other end of the section. A pilot wire is then flown through the section between the winch and tensioner. Pilot wires are placed in blocks on the suspension and tension towers and connected around the winch and tensioner at either end. Using the winch to pull the pilot wires, the conductor is drawn through the section under constant tension by application of the tensioner, allowing the conductor to be controlled without touching the ground. This avoids damage to both the conductor and underlying ground.

**22.16.3 Dismantling the Existing Overhead Line Conductors**

**Watercourse Crossings**

22.16.3.1 Dismantling of the existing line where it crosses the protected Natura 2000 designated watercourses would also use the CSS methods.

22.16.3.2 The CSS equipment is delivered to site using a 4x4 Hiab Lorry and the catenary blocks and support cable deployed along the conductor between the towers either side of the watercourses.
When the CSS equipment is in place and secure, the phase conductors and earthwire are pulled through the section and removed under control and protection provided by the Catenary Blocks. With the conductors dismantled and CSS equipment removed from the towers there would be two ropes left strung between the towers. The two ropes would be carefully lowered and quickly recovered by hand to ensure no plant or equipment is needed in proximity to the watercourses.

**Conductor Dismantling – Ness Woods**

Rollers (running out blocks) are erected at each tower position and the conductor is unclamped and placed in the rollers. Using a winch, the tension of the line is released and the conductors are gently lowered to the ground. The conductors are then coiled up using a winch and removed from site. Where a particular area of sensitivity has been identified within the Construction Procedures Handbook, the conductor shall be cut into manageable sections, coiled up by hand and removed from site. The insulators and old fittings are lowered at this time and removed from site.

**Conductor Dismantling – Drumochter Hills**

Rollers (running out blocks) are erected at each tower position and the conductor is unclamped and placed in the rollers. Using a winch, the tension of the line is released and the conductors are gently lowered to the ground. The conductors are then cut into manageable sections, coiled up by hand and removed from site. The insulators and old fittings are lowered at this time and removed from site.

**22.16.4 Dismantling the Existing Towers**

**Watercourses**

All towers to be dismantled in proximity to the watercourses would be dismantled in a controlled manner using an all terrain crane. No towers would be felled in proximity to the watercourses.

The crane would be positioned within the fenced off working area in accordance to the crane lifting plan as detailed in the Construction Procedures Handbook. This would allow the sections of dismantled tower to be positioned on site in an organised manner away from the watercourses.

**Drumochter Hills & Ness Woods**

The dismantling of each tower is assessed on an individual basis taking into account items such as the location of the tower, available space around the tower and near-by obstacles. If the assessment allows and no other safety or environmental implications are present, the tower would be felled in a controlled manner by cutting two back legs and pulling it over onto its side using a tractor and winch.

If following an assessment of the safety implications the above method of felling cannot be used, then the tower would be unbolted and lowered in sections using a crane.

Once on the ground, the towers are cut into smaller manageable pieces and removed from site. A scrap skip would be delivered to site and the towers cut into manageable pieces using either acetylene cutting equipment or a cutting attachment on the excavator. The scrap steelwork would then be loaded into the skip and removed from site for recycling.

**22.16.5 Foundation Removal**

Tower foundations would be removed using a tracked excavator and mechanical breaker. The excavator would be delivered to site and unloaded at the site entrance.
22.16.5.2 The tower leg foundations would be carefully excavated to a depth of 1m. Where a sensitive site in not occupied for agricultural use, tower foundations can be removed to a reduced level of 300mm. Depths for foundation removal shall be assessed on a site-specific basis and appended to the Construction Procedures Handbook.

22.16.5.3 The excavated topsoil and subsoil would be stockpiled separately adjacent to the foundation in readiness for reinstatement. The concrete can them be broken up and the tower leg cut at the required depth and removed. The foundation can then be backfilled using the subsoil and topsoil which would be stored separately after excavation.

22.16.5.4 Any surplus material would be removed from site and disposed of in accordance to waste regulations.

22.16.6 Specific Site Procedures

22.16.6.1 The following sections detail specific information relating to individual sites and crossings.

Inner Moray Firth SPA (River Beauly)

22.16.6.2 See Figure A3/PTD/6054/165.

Construction – NH 497441

Tower Positions and Access

22.16.6.3 Tower A on the north side of the crossing is approximately 120m from the River Beauly. Access to this site utilises an existing track off the main road. The existing entry point for the access track is approximately 20m from the River Beauly. The track follows in a direction away from the River. A fence would be erected along this track to tower A to prevent personnel or equipment straying in the vicinity of the River.

22.16.6.4 The tower on the south side of the crossing is approximately 230m from the river Beauly. A new access track would be formed to this tower from the existing road.

22.16.6.5 Access tracks are to be installed in accordance to general section above.

22.16.6.6 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.7 The tower is to be assembled and erected in accordance to the general procedures.

Conductor Stringing Requirements

22.16.6.8 There is an area of trees on the south side of the river Beauly approximately 25metres from the riverbank. Prior to conductor stringing and energising, an arboricultural assessment is required to establish if any tree lopping or felling is require to ensure statutory clearance to the overhead line is maintained.

Dismantling the Existing Line - NH 497441

Tower Access

22.16.6.9 Access to tower C on the north side of river Beauly would utilise the same access used for construction of the new line. Similarly, a fence would be constructed on the access to tower C to prevent personnel and equipment straying into the vicinity of the river.

22.16.6.10 Access to tower D on the south side of the river Beauly would utilise an existing track of the main road. Additional temporary matting would be used to extend the track and form a temporary working area.

22.16.6.11 The working areas are to be fully demarked using temporary fencing.

Conductor dismantling

22.16.6.12 The existing line between towers C and D would be dismantled using the CSS methods described above.
**Tower Dismantling**

22.16.6.13 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.14 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

**River Moriston SAC**

22.16.6.15 See Figure A3/PTD/6054/166.

**Construction – NH309132**

**Tower Positions and Access**

22.16.6.16 The tower on the north side of the crossing is approximately 160m from the river Moriston. Access to this site is a new track off the main road.

22.16.6.17 Tower A on the south side of the crossing is over 300m from the River Moriston online and 170m at its closest point to the river. A new access track would be formed to this tower from the existing road.

22.16.6.18 Access tracks are to be installed in accordance to general section above.

22.16.6.19 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.20 The tower would be assembled and erected in accordance to the general procedures above.

**Conductor Stringing Requirements**

22.16.6.21 The conductor would be strung using the CSS methods detailed above. Although there is a wooded area to the Northern side of the river, due to the steep incline away from the river, it is anticipated that no trees would be affected for conductor stringing.

**Dismantling the Existing Line - NH310135**

**Tower Access**

22.16.6.22 Access to the tower on the north side of River Moriston is over 180m from the river. A temporary access would be formed off the road.

22.16.6.23 Tower B on the southern side of River Moriston is approximately 20m from the river edge. The existing access from Wester Inverwick would be extended to allow access to tower B.

22.16.6.24 The working areas are to be fully demarked using temporary fencing.

**Conductor Dismantling**

22.16.6.25 The existing line would be dismantled using the CSS methods described above.

**Tower Dismantling**

22.16.6.26 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.27 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

**River Spey**

22.16.6.28 See Figure A3/PTD/6054/167 and A3/PTD/6054/248.
Construction – NN535945

Tower Positions and Access

22.16.6.29 Tower A (see Figure A3/PTD/6054/248) on the north side of the crossing is approximately 115m from the river Spey. Access to this site utilises an existing track off the main road. The existing track would be extended to allow access to the tower position and working area.

22.16.6.30 The tower on the south side of the crossing is approximately 200m from the river Spey. A new access track would be formed to this tower from the existing road.

22.16.6.31 Access tracks are to be installed in accordance to the general section above.

22.16.6.32 Following studies to be conducted post environmental submission, their may be a requirement to install a new temporary bridge to allow access for construction of the proposed overhead line at Garvabeg (See Figure A3/PTD/6054/167) on the north side of the river Spey. A site-specific assessment would be undertaken in accordance to the developed access strategy and a suitable location for the bridge and corresponding access track shall be selected. This would allow the bridge to be microsited to avoid particularly sensitive locations. Site-specific requirements shall be appended to the construction procedures handbook following further studies.

22.16.6.33 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.34 The tower would be assembled and erected in accordance to the general procedures above.

Conductor Stringing Requirements

22.16.6.35 The conductor would be strung using the CSS methods detailed above. No trees would be affected for conductor stringing.

Dismantling the Existing Line

22.16.6.36 The existing line crosses the River Spey in 4 separate locations. These locations have been identified and listed below.

Crossing 1 – NN545944 (see Figure A3/PTD/6054/249)

Tower Access

22.16.6.37 Access to tower A and tower B would utilise the same track used for construction. Additional temporary matting would be used to extend the track and form a working area around the towers.

22.16.6.38 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.39 The existing line between towers A and B would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.40 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.41 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.
Crossing 2 – NN579935 (see Figure A3/PTD/6054/250)

Tower Access
22.16.6.42 The tower on the northern side of the crossing is approximately 25m from the Spey dam crossing. Access to this site utilises an existing track off the main road. The existing track would be extended to allow access to the tower position and working area.

22.16.6.43 The tower on the south side of the crossing is approximately 75m from the Spey dam crossing. A new access track would be formed to this tower from the existing road.

22.16.6.44 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling
22.16.6.45 The existing line between towers A and B would be dismantled using the CSS methods described above.

Tower Dismantling
22.16.6.46 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.47 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

Crossing 3 & 4 – NN626935 (see Figure A3/PTD/6054/251)

Tower Access
22.16.6.48 Tower A is approximately 65m from the river Spey. Access to this site utilises an existing track off the main road. The existing track would be extended to allow access to the tower position and working area.

22.16.6.49 The tower C is approximately 15m from the river Spey. A new access track would be formed to this tower from the existing road.

22.16.6.50 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling
22.16.6.51 The existing line between towers A and C would be dismantled using the CSS methods described above.

Tower Dismantling
22.16.6.52 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.53 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

River Tay SAC (Includes River Errochty, River Tummel, River Almond and River Tay)

Construction – River Errochty NN723651 (see Figure A3/PTD/6054/168)

Tower Positions and Access
22.16.6.54 Tower A on the north side of the crossing is approximately 190m from the River Errochty. The existing road to Errochty Dam would be used and extended away from the river to give access to the tower position.
22.16.6.55 The tower on the south side of the crossing is approximately 200m from the River Errochty. This would utilise an existing track off the road and be extended away from the river to give access to the tower position.

22.16.6.56 Access tracks are to be installed in accordance to the general section above.

22.16.6.57 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.58 The tower would be assembled and erected in accordance to the general procedures above.

Conductor Stringing Requirements

22.16.6.59 The conductor would be strung using the CSS methods detailed above.

Dismantling the Existing Line – River Errochty NN724650

Tower Access

22.16.6.60 Access to Tower B on the north side of river Errochty would utilise the same access as for construction. This track would be extended to give access to Tower B.

22.16.6.61 Access to the tower on the south side of the river Errochty would utilise the access used for construction. Temporary matting would be used to extend the access and form the working area.

22.16.6.62 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.63 The existing line crossing the River Errochty would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.64 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.65 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

River Tummel

Construction – River Tummel NN756595 (see Figure A3/PTD/6054/257)

Tower Positions and Access

22.16.6.66 The tower on the north side of the crossing is approximately 300m from the river Tummel on the far side of the B846.

22.16.6.67 Tower A on the south side of the river approximately 45m from the river Tummel. The existing road to the sub-station would be extended to allow access to this tower.

22.16.6.68 Access tracks are to be installed in accordance to the general section above.

22.16.6.69 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.70 The tower would be assembled and erected in accordance to the general procedures above.

Conductor Stringing Requirements

22.16.6.71 The conductor would be strung using the CSS methods detailed above. No trees would be affected for conductor stringing.
Proposed Beauly to Denny 400kV Overhead Transmission Line

Technical Annex 22.16

Construction Methodology within Identified Special Study Areas

Dismantling the Existing Line – River Tummel NN758592

Tower Access

22.16.6.72 Tower B on the northern side of the river Tummel is approximately 50m from the river. Tower C on the southern side of the river is approximately 40m from the river.

22.16.6.73 Access to towers on either side of river Tummel would utilise an existing track. Additional temporary matting would be used to extend the track and form the working areas.

22.16.6.74 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.75 The existing overhead transmission line between crossing the river Tummel would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.76 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.77 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

Dismantling the Existing Line – River Tummel NN768591 (see Figure A3/PTD/6054/258)

Tower Access

22.16.6.78 Tower A on the northern side of the River Tummel is approximately 140m from the river and is surrounded by buildings. Tower B on the southern side of the river is approximately 30m from the river and is situated within the boundary of Errochty switching station.

22.16.6.79 Access to towers on either side of river Tummel would utilise an existing track. Additional temporary matting would be used to extend the track and form the working areas.

22.16.6.80 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.81 The existing overhead transmission line between crossing the River Tummel would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.82 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.83 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

River Tay

Construction – River Tay NN798478 (see Figure A3/PTD/6054/170)

Tower Positions and Access

22.16.6.84 The tower on the north side of the crossing is approximately 50m from the river Tay. This would utilise an existing track off the road.

22.16.6.85 The tower on the south side of the crossing is approximately 60m from the river Tay. This would utilise an existing track off the road.
22.16.6.86 Access tracks are to be installed in accordance to the general section above.

22.16.6.87 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.88 The tower would be assembled and erected in accordance to the general procedures above.

Conductor Stringing Requirements

22.16.6.89 The conductor would be strung using the CSS methods detailed above.

22.16.6.90 There is an area of trees on the south side of the River Tay approximately 80 metres from the riverbank. Prior to conductor stringing and energising, an arboricultural assessment is required to establish if any tree lopping or felling is required to ensure statutory clearance to the overhead line is maintained.

Dismantling the Existing Line - NN798478

Tower Access

22.16.6.91 Access to the tower on the north side of river Tay would utilise the same access as for construction. Temporary matting would be used to extend the access and form the working area.

22.16.6.92 Access to the tower on the south side of the river Tay would utilise the access used for construction. Temporary matting would be used to extend the access and form the working area.

22.16.6.93 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.94 The existing overhead transmission line crossing the river Tay would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.95 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.96 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

River Almond

Construction – River Almond NN917288 (see Figure A3/PTD/6054/173)

Tower Positions and Access

22.16.6.97 Tower A on the north side of the crossing is approximately 190m from the River Almond. This would utilise and existing track off the road.

22.16.6.98 The tower on the south side of the crossing is over 300m from the river Almond. This would utilise an existing track off the road.

22.16.6.99 Access tracks are to be installed in accordance to the general section above.

22.16.6.100 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.101 The tower would be assembled and erected in accordance to the general procedures above.

Conductor Stringing Requirements

22.16.6.102 The conductor would be strung using the CSS methods detailed above.
Dismantling the Existing Line - River Almond NN917288

Tower Access

22.16.6.103 Access to the tower on the north side of river Almond would utilise the same access as for construction. Temporary matting would be used to extend the access and form the working area.

22.16.6.104 Access to the tower on the south side of the river Almond would utilise the access used for construction. Temporary matting would be used to extend the access and form the working area.

22.16.6.105 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.106 The existing overhead transmission line crossing the River Almond would be dismantled using the CSS methods described above.

Tower Dismantling

22.16.6.107 The towers are to be dismantled using an all terrain crane in accordance to the general procedures above. The dismantled sections would be cut into smaller manageable pieces using a mechanical cutting attachment on the excavator. The cut sections would be placed in a scrap skip and removed from site for recycling.

22.16.6.108 Tower foundations would be removed to a depth of 1 metre in accordance to the general procedures above.

Ness Woods SAC (see Figure A3/PTD/6054/174 & A3/PTD/6054/175)

Dismantling the Existing Line

Tower Access

22.16.6.109 The tower positions and proposed accesses are as detailed on the attached 1:10,000 landtake and access plans for the Glen Tarff / Ness Woods area.

22.16.6.110 The working areas are to be fully demarked using temporary fencing.

Conductor Dismantling

22.16.6.111 The conductor would be dismantled in accordance to the general procedures above.

Tower Dismantling

22.16.6.112 The dismantling of each tower is assessed on an individual basis taking into account items such as the location of the tower, available space around the tower and near-by obstacles. If the assessment allows and no other safety or environmental implications are present, the tower would be felled in a controlled manner by cutting two back legs and pulling it over onto its side using a tractor and winch.

22.16.6.113 If following an assessment of the safety implications the above method of felling cannot be used, then the tower would be unbolted and lowered in sections using a crane.

22.16.6.114 Once on the ground, the towers are cut into smaller manageable pieces and removed from site. A scrap skip would be delivered to site and the towers cut into manageable pieces using either acetylene cutting equipment or a cutting attachment on the excavator. The scrap steelwork would then be loaded into the skip and removed from site for recycling.

Foundation Removal

22.16.6.115 Using either a wheeled or tracked excavator, the foundation is exposed to a depth of one metre. The concrete on the exposed foundation is then broken into manageable sizes exposing the tower leg underneath. The leg is cut at one metre deep and removed. The foundation would then be backfilled ensuring the backfill is compacted at regular intervals.
When the foundation is completely backfilled, any surplus material is removed from site and disposed of correctly.


**Construction**

**Tower Positions and Access**

22.16.6.116 The tower positions and proposed accesses are as detailed on the attached 1:10,000 landtake and access plans for the Drumochter Hills.

22.16.6.117 The working areas are to be fully demarked using temporary fencing.

22.16.6.118 Access tracks are to be installed in accordance to the general section above.

22.16.6.119 Tower foundations are to be installed in accordance to the general procedures above.

22.16.6.120 The tower would be assembled and erected in accordance to the general procedures above.

**Conductor Stringing Requirements**

22.16.6.121 Conductor Stringing positions have been carefully selected to avoid specific sensitive areas as shown on the attached figures.

22.16.6.122 The conductor would be strung in accordance to the general procedures above.

**Diversion Works 132kV**

22.16.6.123 Due to the close proximity of the proposed 400kV overhead transmission line in relation to the existing 132kV overhead transmission line, there may be a requirement to divert the existing line to enable the new line to be constructed. Detailed diversion schemes have not been developed at this time and it is proposed these are developed as part of the next stage engineering studies post environmental submission.

22.16.6.124 Following initial studies it is proposed that the construction of the new line and dismantling of the existing shall be completed during a detailed outage programme. This shall allow the conductors to be transferred between the existing line and proposed new line in a safe manner whilst minimising disruption within the area. It must be recognised that if detailed design studies show that this can not be achieved then their may be a requirement to construct a temporary diversion of the existing 132kV line onto wood poles. Should this be required the positions for the woodpoles shall be accessed from the access routes constructed for construction and dismantling. Final associated diversion works shall be assessed and detailed within the construction procedures handbook.

**Dismantling the Existing Line**

**Tower Access**

22.16.6.125 The tower positions and proposed accesses are as detailed on the attached 1:10,000 landtake and access plans for the Drumochter Hills.

22.16.6.126 The working areas are to be fully demarked using temporary fencing.

**Conductor Dismantling**

22.16.6.127 The conductor would be dismantled in accordance to the general procedures above.

**Tower Dismantling**

22.16.6.128 The dismantling of each tower is assessed on an individual basis taking into account items such as the location of the tower, available space around the tower and near-by obstacles. If the assessment allows and no other safety or environmental implications are present, the tower would be felled in a controlled manner by cutting two back legs and pulling it over onto its side using a tractor and winch.
22.16.6.129 If following an assessment of the safety implications the above method of felling cannot be used, then the tower would be unbolted and lowered in sections using a crane.

22.16.6.130 Once on the ground, the towers are cut into smaller manageable pieces and removed from site. A scrap skip would be delivered to site and the towers cut into manageable pieces using either acetylene cutting equipment or a cutting attachment on the excavator. The scrap steelwork would then be loaded into the skip and removed from site for recycling.

**Foundation Removal**

22.16.6.131 Using either a wheeled or tracked excavator, the foundation is exposed to a depth of one metre. The concrete on the exposed foundation is then broken into manageable sizes exposing the tower leg underneath. The leg is cut at one metre deep and removed. The foundation would then be backfilled ensuring the backfill is compacted at regular intervals. When the foundation is completely backfilled, any surplus material is removed from site and disposed of correctly.