9 Substation Site Selection

9.1 Introduction

9.1.1 Substations are required to transform the voltage of the electricity from the transmission voltage (400kV or 275kV) down to levels used for onward distribution, or collection, of power. Substations are also used to switch circuits to allow the control of the transmission system and the safe disconnection of circuits for construction and maintenance.

9.1.2 The proposed overhead transmission line is required to connect into six substations at: Beauly, Fasnakyle, Fort Augustus, Tummel, Braco and Denny North. Apart from Fasnakyle, connection to all the substations is a design requirement to collect potential renewable generation developments. A connection is required at Fasnakyle to replace circuits which would be removed as part of the dismantling of the existing 132kV line between Beauly and Denny.

9.1.3 Applications seeking planning permission for the substations have been lodged with the relevant Local Planning Authorities (see Section 2.5.2). The applications were accompanied by the relevant substation environmental appraisals which are included in Volume 4 of this ES.

9.2 Options Appraisal

9.2.1 Options which were considered for each substation (where appropriate) included:

- connection into and extension of the existing substation location;
- relocating the existing substation to a new location nearby;
- construction of a new substation and linking into the existing location.

9.2.2 The Supplementary Notes on the Siting of Substations (part of the NGC 1992 review of the Holford Rules - see Appendix H) were used to help identify the preferred site for each substation together with input from the project team (see Section 9.3):

- Respect areas of high amenity value and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area.
- Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas.
- Use space effectively to limit the area required for development, minimising the effects on existing land use and rights of way.
- Alternative designs of substations may also be considered, for example ‘enclosed’, rather than ‘open’, where additional cost can be justified.
- Consider the relationship of towers and substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints.
- When siting substations take account of the effects of line construction that will need to be made.

9.2.3 As a result of the options appraisal process, the preferred approach for substations along the route is to:

- expand the existing substation sites at Beauly and Fort Augustus;
- to redevelop the existing substation at Fasnakyle; and
- to construct substations on new sites at Tummel, Braco and Denny North.

9.2.4 The existing Braco Substation would be demolished.
9.3 Preferred Locations

9.3.1 The preferred locations for the substations, and a summary of the options assessed, are presented in this section (see also Section 2.5 and the individual substation reports in Volume 4).

9.3.2 Beauly

9.3.2.1 Relocation of the existing substation was discounted by SHETL due to the requirement for a large site and associated redirection of towers and overhead lines. Similarly, construction of an additional substation remote from the existing Beauly Substation was considered to have greater environmental impact and disruption than expansion of the existing facility.

9.3.2.2 The decision to extend the existing Beauly Substation into former quarry land adjacent to the site meets the requirements of being close to the existing site and allowing smooth integration of the new electrical circuits into the existing network. This option also avoids the disruption and potential environmental impacts associated with closure of the site and redevelopment of a large new substation site in a different location.

9.3.2.3 The preferred substation site is located on the southern edge of the community of Wester Balblair, 2km south west of Beauly.

9.3.3 Fasnakyle

9.3.3.1 A number of options for new substation sites in the vicinity of the existing substation at Fasnakyle were examined. Each was considered potentially to result in greater environmental impact than the preferred option which would be to redevelop the existing substation site to provide an upgraded facility.

9.3.3.2 The decision to construct the new substation on the site of the existing substation avoids the use of a new site and allows for the smooth integration of the new electrical circuits into the existing networks. It also avoids the requirement for overhead or underground cables to link an alternative site into the existing substation site.

9.3.3.3 The existing substation site is located in Strathglass, 2km south west of Cannich.

9.3.4 Fort Augustus

9.3.4.1 No alternatives were considered by SHETL for this substation. The existing substation site would be sufficient to contain some of the required new plant. The site would need to be extended to the south onto land owned by SSE.

9.3.4.2 Extending the existing site avoids disruption to existing networks and avoids the environmental impact of creating a new site. The area proposed for the extension is well screened and is presently used for grazing.

9.3.4.3 The existing substation is located in the settlement of Auchteraw, on a wooded hillside, 2.5km south west of Fort Augustus.

9.3.5 Tummel

9.3.5.1 An existing substation, Errochty Substation, is located on land south of the River Tummel in Tummel Bridge. Expansion of this site to provide the required new substation facility was considered but rejected due to environmental impacts including loss of woodland and the requirement to route transmission lines over a nearby holiday park. Relocation of the Errochty Substation to a new site which could incorporate the requirements for the new transmission line was also considered, but again rejected on environmental and technical grounds due to the disruption involved in relocating many overhead and underground lines and significant earthworks required for the nearest feasible site at Tummel Workshop.
9.3.5.2 The preferred option would therefore be to construct a new substation at the Tummel Workshop site and provide a connection to the nearby Errochty Substation via the two 132kV underground cables. The area at Tummel Workshop has been used historically as a construction compound during previous construction works in the area: it has sufficient flat ground for the proposed substation and is screened by existing trees.

9.3.5.3 Tummel Workshop site is approximately 0.5km west of the settlement of Tummel Bridge on the southern side of the River Tummel.

9.3.6 Braco

9.3.6.1 Several alternative sites for the development of a new substation site were considered. The choice of sites was limited by the key criteria that the new substation must be along the route of, or close to, the proposed transmission line and relatively close to the existing substation to facilitate reconnection of electrical circuits.

9.3.6.2 Whilst a number of alternative sites were considered, environmental issues and site conditions narrowed down the available options to a preferred new Braco Substation. This would be constructed at a site which allows connection both to the overhead transmission line and existing overhead line circuits as well as the underground cable circuits to the Braes of Doune windfarm. It would also allow the existing Braco Substation, which is situated within an area of archaeological interest, to be removed.

9.3.6.3 The proposed new substation would be located on a site 4 km west of Braco (and 4.5km west southwest of the present Braco Substation) on land that is currently occupied by commercial forestry.

9.3.7 Denny North

9.3.7.1 At present the Denny North site is a strategic junction in electrical transmission network where five existing 275kV and two 132kV overhead lines converge. The proposed site offers a location where no new overhead lines or extensive deviations of the existing network would be required to accommodate the construction of the new substation and connection of the Beauly to Denny 400kV overhead line into the existing network.

9.3.7.2 Denny North Substation site is located in a rural area 2km north of Denny.