

Appendices

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Appendix A The Holford Rules

Rule 1

Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

Note on Rule 1

(a) Investigate the possibility of alternative routes, avoiding altogether, if possible major areas of highest amenity value. The consideration of alternative routes must be an integral feature of environmental statements. If there is an existing transmission line through a major area of highest amenity value and the surrounding land use has to some extent adjusted to its presence, particularly in the case of commercial forestry, the effect of remaining on this route must be considered in terms of the effect of a new route avoiding the area.

(b) Areas of highest amenity value require to be established on a project-by-project basis considering Schedule 9 to The Electricity Act 1989, Scottish Planning Policies, National Planning Policy Guidelines, Circulars and Planning Advice Notes and the spatial extent of areas identified.

Examples of areas of highest amenity value which should be considered are:

Special Area of Conservation (SAC)

Special Protection Area (SPA)

Ramsar Site

National Scenic Areas (NSA)

National Parks

National Nature Reserves (NNR)

Protected Coastal Zone Designations

Sites of Special Scientific Interest (SSSI)

Schedule of Ancient Monuments

Listed Buildings

Conservation Areas

World Heritage Sites

Historic Gardens and Designed Landscapes

Rule 2

Avoid smaller areas of high amenity value or scientific interest, by deviation; provided that this can be done without using too many angle towers (i.e. the more massive structures which are used when lines change direction).

Note on Rule 2

Small areas of highest amenity value not included in Rule 1 as a result of their spatial extent should be identified along with other areas of regional or local high amenity value identified from development plans.

Impacts on the setting of historic buildings and other cultural heritage features should be minimised.

If there is an existing transmission line through an area of high amenity value and the surrounding land uses.

Rule 3

Other things being equal, choose the most direct line, with no sharp changes of direction and thus fewer angle towers.

Note on Rule 3

Where possible choose inconspicuous locations for angle towers, terminal towers and sealing end compounds.

Too few angles on flat landscape can also lead to visual intrusion through very long straight lines of towers, particularly when seen nearly along the line.

Rule 4

Choose tree and hill backgrounds in preference to sky background wherever possible and when the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferably between belts of trees.

Rule 5

Prefer moderately open valleys with woods, where the apparent height of the towers will be reduced and views of the line will be broken by trees.

Notes on Rules 4 and 5

Utilise background and foreground features to reduce the apparent height and domination of towers from main viewpoints.

Minimise the exposure of numbers of towers on prominent ridges and skylines.

Where possible follow open space and run alongside, not through woodland or commercial forestry, and consider opportunities for skirting edges of copses and woods. Where there is no reasonable alternative to cutting through woodland or commercial forestry, the Forestry Commission Guidelines should be followed (Forest Landscape Design Guidelines, second

edition, The Forestry Commission 1994 and Forest Design Planning – A Guide to Good Practice, Simon Bell/The Forest Authority 1998).

Protect existing vegetation, including woodland and hedgerows, and safeguard visual and ecological links with the surrounding landscape.

Rule 6

In country which is flat and sparsely planted, keep the higher voltage lines as far as possible independent of smaller lines, converging routes, distribution lines and other masts, wires and cables so as to avoid a concatenation or ‘wirescape’.

Note on Rule 6

In all locations minimise confusing appearance.

Arrange wherever practicable that parallel or closely related routes are planned with tower types, spans and conductors forming a coherent appearance. Where routes need to diverge allow, where practicable, sufficient separation to limit the impacts on properties and features between lines.

Rule 7

Approach urban areas through industrial zones where they exist and where pleasant residential and recreational land intervenes between the approach line and substation, go carefully into the costs of undergrounding, for lines other than those of the highest voltage.

Note on Rule 7

When a line needs to pass through a development area, route it so as to minimise as far as possible the effect on development.

Alignments should be chosen after consideration of impacts on the amenity of existing development and on proposals for new development.

When siting substations take account of the impacts of the terminal towers and line connections that will need to be made and take advantage of screening features such as ground form and vegetation.

Supplementary Notes

- a. Residential Areas: Avoid routeing close to residential areas as far as possible on grounds of general amenity.
- b. Designations of Regional and Local Importance: Where possible choose routes which cause the least disturbance to Areas of Great Landscape Value and other similar designations of Regional or Local Importance.
- c. Alternative Lattice Steel Tower Designs: In addition to adopting appropriate routeing, evaluate where appropriate the use of alternative lattice steel tower designs available where these would be advantageous visually, and where the extra cost can be justified.

[Note: SHETL have reviewed the visual and landscape arguments for the use of lattice steel towers in Scotland and summarised these in a document entitled Overhead Transmission Line Tower Study 2004].

Further Notes on Clarification to The Holford Rules

Line Routeing and People

The Holford Rules focused on landscape amenity issues for the most part. However, line routeing practice has given greater importance to people, residential areas etc. The following notes are intended to reflect this.

- a. Avoid routeing close to residential areas as far as possible on grounds of general amenity.
- b. In rural areas avoid as far as possible dominating isolated house, farms or other small-scale settlements.
- c. Minimise the visual effect perceived by users of roads, and public rights of way, paying particular attention to the effects of recreational, tourist and other well used routes.

Supplementary Notes on the Siting of Substations

- a. Respect areas of high amenity value (see Rule 1) and take advantage of the containment of natural features such as woodland, fitting in with the landscape character of the area.
- b. Take advantage of ground form with the appropriate use of site layout and levels to avoid intrusion into surrounding areas.
- c. Use space effectively to limit the area required for development, minimizing the effects on existing land use and rights of way.
- d. Alternative designs of substations may also be considered, e.g. 'enclosed', rather than 'open', where additional cost can be justified.
- e. Consider the relationship of towers and substation structures with background and foreground features, to reduce the prominence of structures from main viewpoints.
- f. When siting substations take account of the effects of line connections that will need to be made.

Appendix B The Horlock Rules

Overall System Options and Site Selection

1. In the development of system options including new substations, consideration must be given to environmental issues from the earliest stage to balance the technical benefits and capital cost requirements for new developments against the consequential environmental effects in order to keep adverse effects to a reasonably practicable minimum.

Amenity, Cultural or Scientific Value of Sites

2. The siting of new NGC substations, sealing end compounds and line entries should as far as reasonably practicable seek to avoid altogether internationally and nationally designated areas of the highest amenity, cultural or scientific value by the overall planning of the system connections.

Notes:

- i. Internationally and nationally designated areas of highest amenity, cultural or scientific value are:
 - National Parks
 - Areas of Outstanding Natural Beauty
 - Heritage Coasts
 - World Heritage Sites
 - Ramsar Sites
 - Sites of Special Scientific Interest
 - National Nature Reserves
 - Special Protection Areas
 - Special Areas of Conservation
 - ii. Care should be taken in relation to all historic sites with statutory protection e.g. Ancient Monuments, Battlefields and Listed Buildings.
 - iii. Account should be taken of Government Planning Policy Guidance and established codes of practice.
 - iv. Account should be taken of any development plan policies relevant to the siting or design of substations.
3. Areas of local amenity value, important existing habitats and landscape features including ancient woodland, historic hedgerows, surface and ground water sources and nature conservation areas should be protected as far as reasonably practicable.

Local Context, Land Use and Site Planning

4. The siting of substations, extensions and associated proposals should take advantage of the screening provided by landform and existing features and the potential use of site

layout and levels to keep intrusion into surrounding areas to a reasonably practicable minimum.

Notes:

- i. A preliminary study should be undertaken to identify the extent of land required to meet both operational and environmental needs.
 - ii. In some instances it may be possible to site a substation partially or fully enclosed by existing woodlands.
 - iii. Topographical information should be obtained at an early stage. In some cases a geotechnical survey may be required.
5. The proposals should keep the visual, noise and other environmental effects to a reasonably practicable minimum.

Notes:

- i. Allow sufficient space for screening of views by mounding or planting.
 - ii. Consider appropriate noise attenuation measures where necessary.
 - iii. Use security measures which minimise visual intrusion from lighting.
 - iv. Consider appropriate on-site water pollution prevention measures.
 - v. Consider adjoining uses and the amenity of local inhabitants.
6. The land use effects of the proposal should be considered when planning the siting of substations or extensions.

Notes:

- i. Issues for consideration include potential sterilisation of nationally important land, e.g. Grade 1 agricultural land and sites of nationally scarce minerals.
- ii. Effects on land drainage.

Design

7. In the design of new substations or line entries, early consideration should be given to the options available for terminal towers, equipment, buildings and ancillary development appropriate to individual locations, seeking to keep effects to a reasonably practicable minimum.

Notes:

- i. With outdoor equipment, a preference should be given normally to a low profile design with low height structures and silhouettes appropriate to the background.
- ii. Use lightweight narrow section materials for taller structures especially for gantries over about 6 metres in height.
- iii. Commission exterior design and colours appropriate to the surroundings.

- iv. Materials and colours for buildings, equipment and fencing should be chosen to harmonise with local surroundings.
 - v. v. Where possible avoid the use of prominent insulators by consideration of available colours appropriate to the background.
 - vi. Where possible site buildings to act as visual screens for switchgear.
 - vii. Ensure that the design of high voltage and low voltage substations is co-ordinated by early consultation between NGC and its customers.
 - viii. Where there are particular technical or environmental constraints, it may be appropriate to consider the use of Gas Insulated Switchgear (GIS) equipment which occupies less space and is usually enclosed within a building.
 - ix. Early consideration should be given to the routeing of utility service connections.
8. Space should be used effectively to limit the area required for development consistent with appropriate mitigation measures and to minimise the adverse effects on existing land use and rights of way, whilst also having regard to future extension of the substation.

Notes:

- i. Assess the benefit of removing redundant substation equipment from existing sites where this would improve their appearance.
9. The design of access roads, perimeter fencing, earthshaping, planting and ancillary development should form an integral part of the site layout and design to fit in with the surroundings.

Line Entries

10. In open landscape especially, high voltage line entries should be kept, as far as possible, visually separate from low voltage lines and other overhead lines so as to avoid a confusing appearance.
11. The inter-relationship between towers and substation structures and background and foreground features should be studied to reduce the prominence of structures from main viewpoints. Where practicable the exposure of terminal towers on prominent ridges should be minimised by siting towers against a background of trees rather than open skylines.