

# Earlshaugh Windfarm Grid Connection



## Public Consultation Document



ScottishPower  
EnergyNetworks



SP EnergyNetworks

**Public Consultation Document**

**Proposed Grid Connection for Earlshaugh Windfarm**

October 2007



**ScottishPower**  
EnergyNetworks



|                                                        |           |
|--------------------------------------------------------|-----------|
| <b>1.0 Introduction</b>                                | <b>1</b>  |
| <b>2.0 The Project</b>                                 | <b>3</b>  |
| <b>3.0 Routeing an Overhead Transmission Line</b>      | <b>5</b>  |
| <b>4.0 Study Area</b>                                  | <b>9</b>  |
| <b>5.0 Route Options and Preferred Route Alignment</b> | <b>13</b> |
| <b>6.0 Way Forward</b>                                 | <b>19</b> |

## **Appendices**

A: Initial Information Collection

B: Preliminary Environmental Review

C: Preliminary List of Potential Effects

D: Preliminary List of Proposed Desk and Field Studies

## **Tables**

1. Approach to Routeing and EIA of Overhead Transmission Lines
2. Summary of Preliminary Environmental Review of Route Options

## **Figures**

1.1 Location Plan

1.2 Heavy Duty Flat Formation 132kV Wood Pole

4.1 Designated Areas, Features and Infrastructure

4.2 Landscape Character Types

4.3 Visual Spaces and Key Views in Study Area (Indicative Only)

5.1 Route Options

5.2 Preferred Route

5.3 Preferred Route Aerial Photographs (a- d)

## **References**

## **Glossary of Terms**



## 1.0 Introduction

### 1.1 Project Need

ScottishPower, through its subsidiary SP Transmission Ltd (SPT) proposes to construct a new 132kV overhead line in the Scottish Borders, and Dumfries and Galloway. The proposed development is needed to allow a connection to the electricity grid network for the proposed Windfarm at Earlshaugh (Figure 1.1).

SP Transmission are responsible for electricity transmission in the South of Scotland, and as an electricity transmission licence holder as defined in the Electricity Act 1989 (as amended by the Utilities Act 2000) is required *“to develop and maintain an efficient, co-ordinated and economical system of electricity supply”*. To comply with the licence obligations, SPT must provide the proposed windfarm at Earlshaugh with a connection to the electricity grid network.

The Scottish Executive is currently encouraging, through the Renewable Obligation (Scotland) Order 2002, the development of electricity generation from renewable sources in Scotland. To help develop Scotland’s renewable energy resources, the National Planning Frameworks (2004) states, *“while grid reinforcement will in general take place along existing routes, some new connections and route modifications will be necessary”*.

### 1.2 Proposed Overhead Line

The proposed overhead line for the grid connection between the proposed windfarm at Earlshaugh and the 400/132kV substation at Moffat is a Heavy Duty Flat Formation 132kV pole design. This overhead line design utilises wooden poles approximately 14-16m in height (with insulators fitted) set 2.5m into the ground, with an average span of up to 120m. The length of new overhead line would be approximately 15km. For information, photographs of an existing wood pole line are indicated in Figure 1.2.

The use of steel poles maybe required above a certain altitude and this is subject to further detailed engineering and overhead line design. The use of steel poles to cross the higher ground would require concrete foundations.

### 1.3 Purpose of the Public Consultation Document

The purpose of this Consultation Document is to provide a review of the route selection process to date, to identify the Preferred Route alignment and to invite comment. Consultation at the route selection stage follows the approach adopted by SPT to line routing and is part of the ongoing environmental impact assessment of the proposed development.

Environmental Impact Assessment (EIA) is a procedure required under the terms of the European Union Directives 85/337/EEC and 97/11/EC on assessment of the effects of certain public and private projects on the environment. Article 2 of the Directive requires that *“Member States shall adopt all measures necessary to ensure that, before consent is given, projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects”*. Article 8 then requires that *“The results of consultations and information gathered pursuant to [the EIA procedure] must be taken into consideration in the development consent procedure.”*

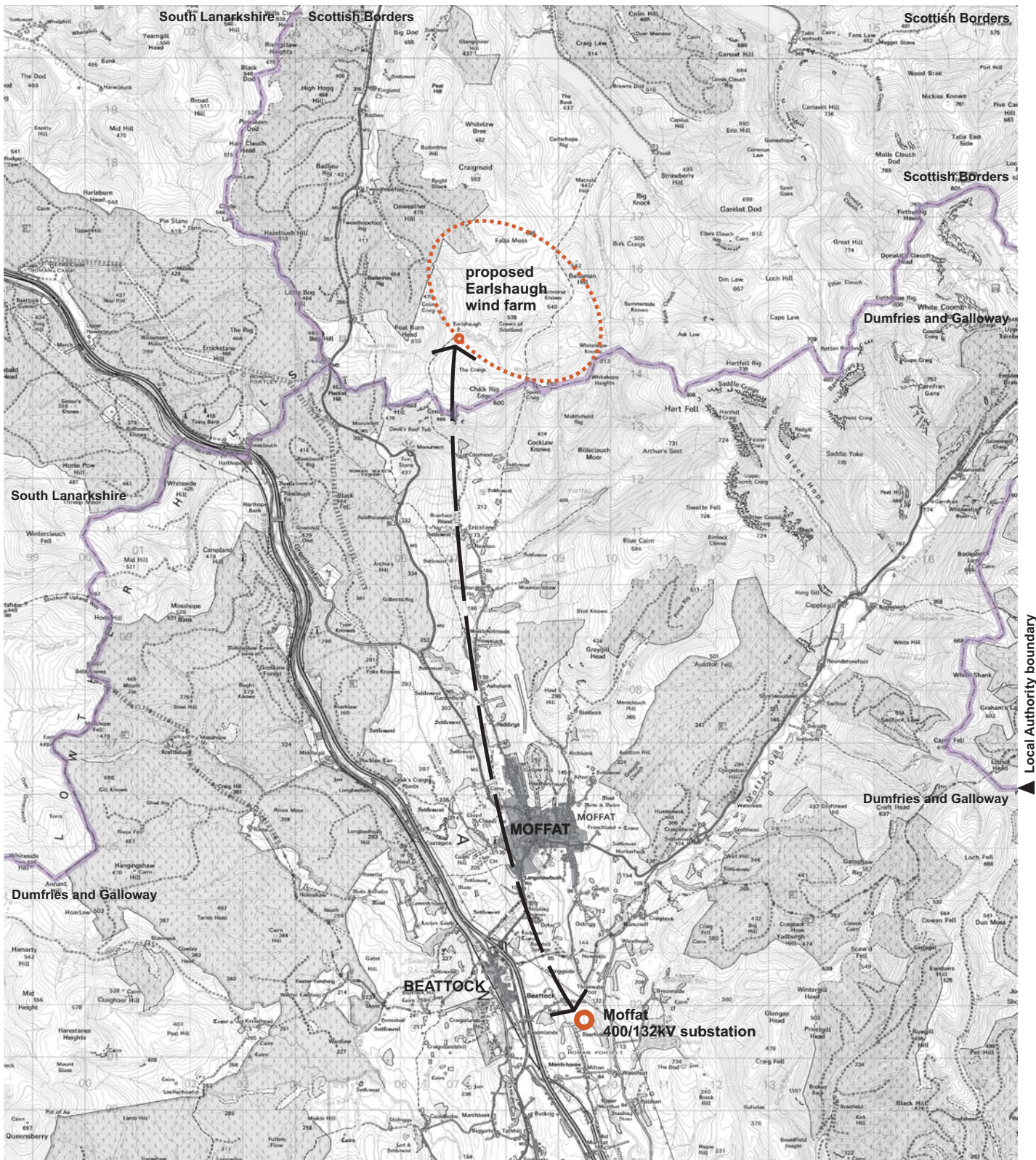
### 1.4 Preparation of the Scoping Report and Environmental Statement

The proposed overhead line route will then be carried forward to detailed Environmental Impact Assessment (EIA), the results of which will be reported in an Environmental Statement (ES). The Environmental Statement will support the Section 37 application under the Electricity Act 1989 to Scottish Ministers for consent to construct and operate the overhead line.

To ensure that the Environmental Statement (ES) covers all the relevant issues and that the concerns of external stakeholders have been taken into account in the design process and assessment, the EIA project team will progress a programme of consultations with organisations with an interest in the proposed development. This baseline information will be used to assess the level of significance of effect of the proposed development on the environment and the findings reviewed in a Scoping Report. The Scoping Report will then be submitted to Scottish Ministers to seek an opinion under Schedule 7 of the Electricity Works (EIA)(Scotland) Regulations 2000 as to the proposed scope of information to be provided in the Environmental Statement.







Based upon OS 1:50000 map with permission of HMSO. Crown copyright reserved.  
 SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 1.1**

Title:  
**LOCATION PLAN**

Project:  
 Proposed Grid Connection to Earlsbaugh Windfarm

Scale: 1:100,000 @ A4

Date: October 2007



0 5km

Prepared by Environmental Designworks for SP Transmission Ltd

**Environmental Designworks**  
 Landscape Architecture + Planning

tel/fax:0131 662 0359





SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 1.2**

Title:  
**HEAVY DUTY FLAT FORMATION 132KV WOOD POLE**

Project:  
**Proposed Grid Connection to Earlshaugh Windfarm**

Scale:NA

Date: October 2007

Prepared by Environmental Designworks for SP Transmission Ltd

**Environmental Designworks**  
Landscape Architecture + Planning

tell/fax:0131 662 0359



## 2.0 The Project

### 2.1 Proposed Overhead Line (OHL)

The proposed overhead line for the 15km grid connection between the proposed windfarm at Earlsbaugh and the substation at Moffat is a Heavy Duty Flat Formation 132kV pole design. These poles are approximately 14-16m in height (with insulators fitted) set 2.5m into the ground, with an average span of up to 120m (Figure 1.2).

### 2.2 Construction Method

All construction works would be designed and programmed to minimise disturbance to sensitive habitats and species.

Overhead line construction typically follows a standard sequence of operations, which are:

- Prepare access
- Prepare pole excavations/ foundations
- Erect poles
- String conductors
- Reinstate pole sites and remove temporary accesses.

Construction of the line would involve the erection of pre-assembled poles on site requiring a gang of up to 12 men and access to every pole site using off road vehicles. Vehicles range from quad bikes and landrovers through to JCB's, "Hiab" type lorries with extendable lifting arms and tractors with winch attachments. In difficult ground conditions a tracked machine may be used.

Access can take various forms and is dependent on ground conditions. In poorer conditions more access works maybe required which can vary from laying temporary wooden or aluminium matting to installing crushed stone roads.

Every effort is made to cause the least disturbance to landowners and local residents during construction. Should the proposals be granted consent, SPT undertakes further detailed consultations at that stage with those directly affected by the development to ensure all effects during construction are minimised.

All construction works are controlled by an Environmental Management Plan prepared by SPT that covers the mitigation measures identified to minimise the environmental effects of the proposed development such as implementation timescales, detailed design measures and safeguarding sensitive habitats and species, further surveys required before commencing works etc.

### 2.3 Technical Constraints

Experience of the difficulties of maintaining lines in exposed areas of Wales has led SP Manweb to define two altitude<sup>1</sup> limits for wood pole lines. This guidance indicates that routes for wood pole 132kV overhead lines should preferably be no higher than 350m AOD. As noted, the proposed route is subject to further detailed engineering study and it maybe necessary to use steel poles to cross the higher ground or other overhead line design.

Further limitations in design specifications restrict where an overhead line can be built, as follows:

- Slopes - avoid extensive slopes over 15 degrees and especially over 22 degrees unless unavoidable
- Rock Outcrops - avoid extensive areas of rock to minimise construction difficulties.
- Deep Peat - avoid extensive areas of deep peat to avoid construction foundation difficulties

---

<sup>1</sup> Altitude being effectively an index of climate severity and exposure

## 2.4 Legislative Framework

The legal provisions applying to the development of overhead lines in Scotland are principally the Electricity Act 1989 and the Electricity Works (EIA)(Scotland) Regulations 2000.

All transmission licence holders are required by Schedule 9 of the 1989 Act to take account of the following factors in formulating any relevant proposals: -

- a) *“to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and,*
- b) *to do what he reasonably can to mitigate any effect the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects”*

Scottish Power interprets the words “*reasonably can*” to mean that it should make every effort to mitigate the environmental effects, whilst bearing in mind the technical constraints imposed by overhead transmission line technology, and its duties under Section 9 of the Electricity Act. In summary, SPT needs to balance technical, economic and environmental considerations as part of the process of developing proposals for grid connections.

## 2.5 Statutory Consent

The proposed OHL will be subject to an application for consent to Scottish Ministers under Section 37 of the Electricity Act 1989. The Ministers are required to consult with the planning authority within whose area the proposed application is located. For the proposed 132kV overhead line this will be Dumfries and Galloway Council, and Scottish Borders Council.

## 2.6 Environmental Statement

With reference to the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000, SPT considers that the proposed 132kV overhead line qualifies as an EIA development under Schedule 2 and intends to submit an Environmental Statement to accompany the Section 37 application for consent.

### 3.0 Routeing an Overhead Transmission Line

#### 3.1 Objective

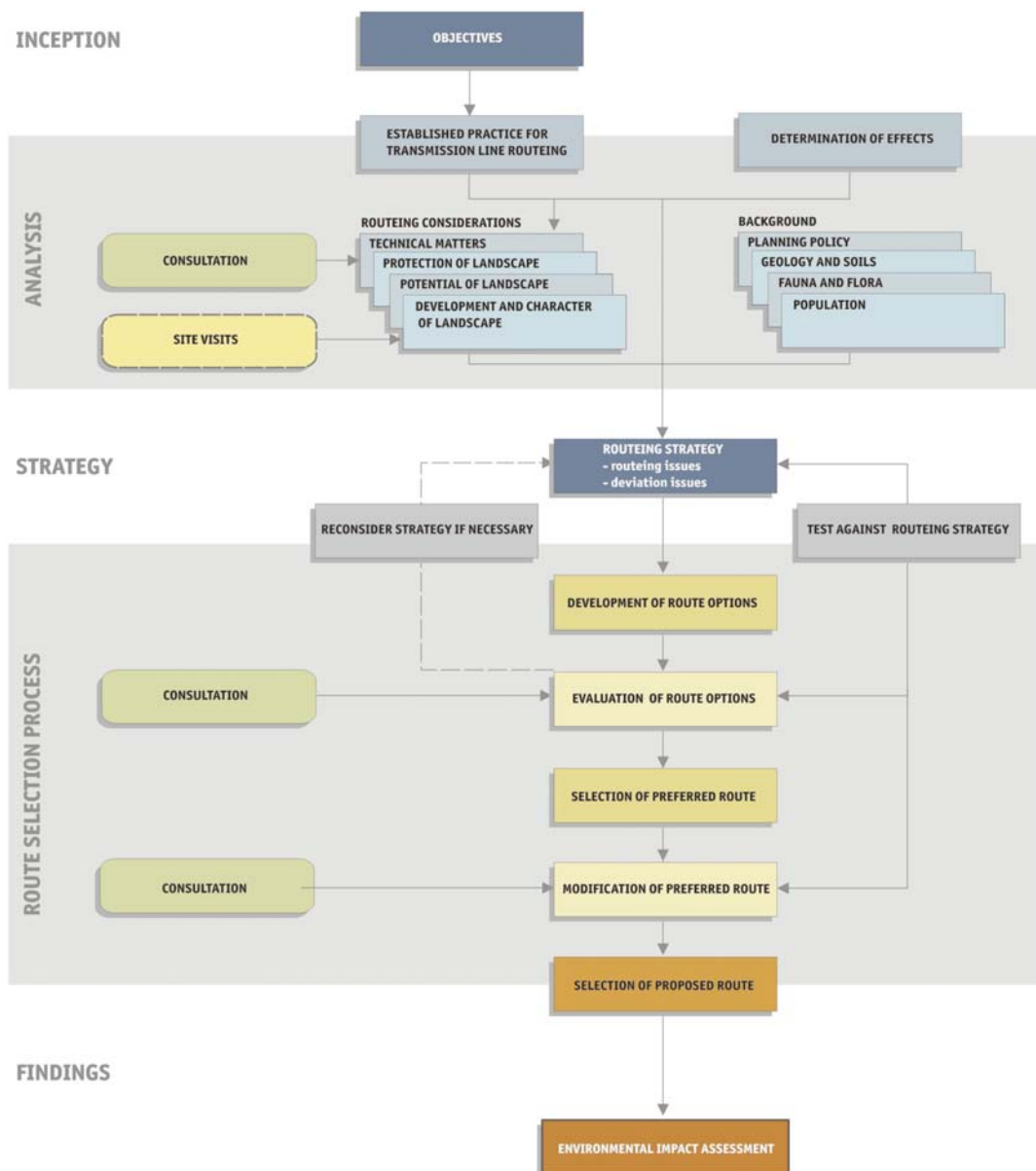
The objective of routeing an overhead transmission line between specified points is to identify a technically feasible and economically viable route, which causes the least disturbance to people and the environment.

#### 3.2 Approach

The adopted approach for overhead transmission line routeing is based on the premise that the principal way of mitigating environmental effect is by the selection of the most appropriate route. Integral to this approach is the fact that the route selection process must be objective and comprehensive to the ultimate decision-making authority and those stakeholders whose interests are affected by the proposed development.

The approach is an iterative, systematic evaluation of route alternatives with professional judgement used to establish explicitly the balance between factors. Consultation is an integral part of the routeing strategy process. The approach to routeing of overhead transmission lines is summarised in the below Table 1<sup>2</sup>.

**Table 1:** Approach to the Routeing and EIA of Overhead Transmission Lines



<sup>2</sup> Marshall, R & Baxter, R (2002)

### 3.3 The Holford Rules

The basis for the approach to overhead transmission line routeing has developed from the “*Holford Rules*”<sup>3</sup>. These principles have been developed over time, and established practice within the electricity supply industry for overhead transmission line routeing in Scotland<sup>4</sup> is as follows:

*“Rule 1: Avoid altogether, if possible, the major area 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.*

*Rule 2: Avoid smaller areas of highest 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 a line changes direction.*

*Rule 3: Other things being equal, choose the most direct line, with no sharp changes of direction and thus with few angle towers.*

*Rule 4: Choose tree and hill backgrounds in preference to sky backgrounds, 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 towers will be reduced, and views of the line will be broken by trees.*

*Rule 6: In country which is flat and sparsely planted, keep the high voltage lines as far as possible independent of smaller lines, converging routes, distribution poles and other masts, wires and cables, so as to avoid a concatenation or “wirescape”.*

*Rule 7: Approach urban areas through industrial zones, where they exist; and when pleasant residential and recreational land intervenes between the approach line and the substation, go carefully into the comparative costs of undergrounding, for lines other than those of highest voltage.”*

Further supplementary and clarification notes extracted from this Guidance<sup>5</sup> have been placed below: -

#### **“Supplementary Notes**

- a) 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.*

#### **Further Notes on the Clarification of 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 houses, 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.”*

---

<sup>3</sup> Holford, 1959

<sup>4</sup> SHETL (2004)

<sup>5</sup> SHETL (2004)



### 3.4 Forestry Commission Guidance

The Forestry Commission also has design guidance for integrating overhead lines through woodlands<sup>6</sup>, which is summarised below: -

1. *“Route transmission lines to follow open space and run alongside, not through woodland.*
2. *Where there is no alternative route; a power line through the forest should: -*
  - *avoid areas of landscape sensitivity;*
  - *avoid the line of sight of important views;*
  - *be kept in valleys and depressions;*
  - *not divide a hill into two similar parts where it crosses over a summit;*
  - *cross skyline or ridges where they drop to a low point;*
  - *follow alignments diagonal to the contour as far as possible;*
  - *be inflected upwards in hollows and downwards on ridges.*
3. *In the design of the transmission line corridor, the transmission line within forests should seem to pass through a series of irregular spaces. The forest should appear to meet across open spaces in some places so that the corridor does not split the forest completely. The aim should be a corridor of varying character and width, swinging from one side to the other, taking care to avoid irregular but parallel edges or irregular but symmetrical spaces. Exit points should be gently asymmetrical bell-mouths. Felling areas should be planned to link with and cross the power line corridor and create greater irregularity.”*

### 3.5 Potential Impacts

An overhead transmission line is a linear feature within the landscape. SPTs’ approach to route selection is based on the premise that the major effect of an overhead transmission line is visual and that the degree of visual intrusion can be reduced by careful routing. This can be achieved by routing the line to fit the topography, by using topography and trees to provide screening and/or background and by routing the line at a distance from settlements and roads. Other potential environmental effects of such a development are likely to be interactions with visual amenity, the landscape character, landuse, nature conservation, cultural heritage, recreation and tourism. In addition to permanent effects, the construction and operational effects also need to be considered.

Potential visual and physical effects relate primarily to the structure carrying the transmission lines. The structure and conductors may be visible from properties, roads, tourist attractions and other important locations, and may alter the character of the landscape. Physical effects relate primarily to the proposed structure such as the ground area occupied, underground disturbance of features to construct the required foundations and possible requirement for temporary access tracks during construction. Transmission line conductors require specific safety clearances and may, for example, necessitate the removal of trees. The location and siting of the structure and conductors may also have an effect on bird movement.

### 3.6 Routing Considerations

The review of potential effects, together with established routing practice, allows the main technical and environmental considerations to be identified which promote the routing of a transmission line with the least visual intrusion and minimum disturbance to people and the environment. These routing considerations include topography, landscape character, visual amenity, areas of nature conservation and historic interest, and other features such as areas of recreational or tourist value.

### 3.7 Routing Strategy

The review of technical and environmental considerations for the Study Area, together with established practice, guides the routing strategy and allows a number of route options to be developed.

This approach establishes considerations that are used to identify broad corridors (routing issues) and those which are used to modify routes (deviation issues). Routing issues are generally strategic and extensive in area, whilst deviation issues tend to be of local importance and smaller in scale.

### 3.8 Development and Evaluation of Route Options

Based on the routing strategy, a number of route options are then developed and the effect on the routing considerations recorded. At this stage a route option may be rejected, modified or studied in more detail.

---

<sup>6</sup> Forestry Commission, 1994

The objective of this process remains that of identifying a preferred route, which has the least likely adverse environmental effects, whilst being technically feasible and economically viable.

### **3.9 Selection of a Preferred Route**

After the comparative evaluation of route options, a Preferred Route alignment is selected and a document for public consultation prepared. This Public Consultation Document aims to provide an objective and transparent understanding of the routeing strategy process to date and identifies a Preferred Route. The stages following the review of feedback from the Consultation Document are set out in **Chapter 6.0: Way Forward**.

## 4.0 The Study Area Environment

### 4.1 Study Area

The study area was identified at the outset of the Project to establish and define an area of search for route options and the gathering of environmental baseline data. This area was defined by the broad corridors within which it would be feasible to construct an overhead line between the proposed windfarm at Earlshaugh and substation at Moffat. A wider area encompassing this potential route corridors area was identified extending approximately 5km to form the boundary of the Study Area.

### 4.2 Environmental Baseline

Information regarding the environmental features and sensitivities of the proposed Study Area at this initial stage of the Project is presented below and in the accompanying Figures 4.1- 4.3 (placed at the end of this Chapter).

**Figure 4.1:** presents environmental designations and other features such as the Southern Upland Way and major infrastructure aligned through the Study Area.

**Figure 4.2:** presents information regarding the landscape character types for the Study Area as identified by Scottish Natural Heritage (SNH).

**Figure 4.3:** presents indicative visual spaces and key views within the Study Area

The information for these Figures and provided in this Chapter was collected from published documents, site visits and initial contact with a number of consultees at the outset of the project (as listed in Appendix A). In detail, the following has been undertaken: -

- Desk study of aerial photographs
- Desk review of current environmental data, designations and policies relating to the Study Area.
- Site appraisal of the environmental resources and potential receptors within the Study Area
- Reference to the Dumfries and Galloway, Borders and Clyde Valley Landscape Assessments by Scottish Natural Heritage.
- Information available from: Local Plan and Structure Plans covering the Study Area, Historic Scotland, WoSAS, Council Archaeological Services, Council Access Officers, Transco, Shell UK and SP Energy Networks.

### 4.3 Planning Context (Figure 1.1)

The following development plans cover the Study Area: -

- Annandale and Eskdale Local Plan. Adopted 2006
- Scottish Borders Local Plan. Finalised December 2005.
- South Lanarkshire Local Plan. Consultative Draft. October 2005.
  
- Dumfries and Galloway Structure Plan. Adopted 1999.
- Scottish Borders Structure Plan. Adopted 2002.
- Glasgow and Clyde Valley 2025 Consultative Draft Structure Plan. Published 2005

### 4.4 Topography (Figure 2.1)

To the south of the Study Area is the wide valley of Annandale aligned in a north- south direction. To the north, the valley divides into a number of narrower valleys following the alignment of rivers, which flow southwards. At the head of the Annandale valley is a spectacular steep sided hollow, 250m deep, named the Devils Beef Tub, a natural feature described by Walter Scott *“as if four hills were laying their heads together, to shut out daylight from the dark hollow space between them”*.

An elevated range of hills divides the watersheds of the River Annan and River Tweed. To the north the River Tweed flows northwards across the Southern Upland plateau. To the east and west, numerous watercourses flow into the River Tweed. To the north, the long steep sides valleys of Fruid and Talla aligned northwest to southeast have been dammed to form reservoirs.

## 4.5 Key Landscape Features of the Study Area (Figure 4.1)

### 4.5.1 Landcover

The landcover along the Annandale Valley is mainly improved and semi improved pasture, bounded by hedgerows, stone walls and post and wire fences. The valley sides and higher ground are semi improved or open unimproved grassland. Along the valley, areas of deciduous or mixed woodland are mainly associated with areas of higher ground and larger properties. To the north of Moffat are a number of linear strips of deciduous woodland aligned west- east following the alignment of smaller watercourses flowing into the River Annan. A number of small blocks and strips of coniferous woodland are also scattered along the valley side and around Ericstane to the north of the valley. On the higher ground are larger coniferous plantations. To the north, along the River Tweed, the landcover is either large scale coniferous plantations or open rough grassland.

### 4.5.2 Landuse

The landuse of the Study Area is largely determined by the topography and elevation. The Annandale valley floor is primarily agricultural land used for sheep and cattle grazing. The main settlements of Moffat and Beattock and many scattered properties and farmsteads are located in this lower sheltered area. Moffat historically developed as a spa resort in Victorian times and is still an important tourist destination. Aligned along the valley in a north-south direction are the main transport corridors that form part of the local, regional and national network of routes.

To the north, the valley slopes and higher ground are primarily open grassland with commercial plantations on the upland plateaux areas.

### 4.5.3 Landscape designations

The following regional landscape designations are located within or adjacent to the Study Area

- Tweedsmuir Hills/ Upper Tweeddale Area of Great Landscape Value
- Regional Scenic Area encompassing the south-eastern part of South Lanarkshire.
- Moffat Hills Regional Scenic Area

In addition, the Central Southern Uplands Environmentally Sensitive Area encompasses the upland areas. This area was designated in 1993 as the landform, upland vegetation and manmade features of the farmed landscape combined to create a landscape of natural heritage interest. Within an ESA, farmers are encouraged to sign management agreements, which provide payments for carrying out special farming practices, protection measures, environmental enhancement and positive conservation measures. Applications to participate in the ESA scheme were closed in 2000.

Approximately 8km to the north of Talla Reservoir and beyond the Study Area is the Upper Tweeddale National Scenic Area.

### 4.5.4 Landscape Character Assessment (Figure 4.2)

Scottish Natural Heritage has undertaken a series of Regional Landscape Character Assessments covering the whole of Scotland. The landscape character types identified in Dumfries and Galloway, the Borders and South Lanarkshire SNH documents have been reviewed for the Study Area. Landscape Types are *“tracts of land, defined at a more detailed level, which have a unity of character due to particular combinations of landform and landcover and a consistent and distinct pattern of constituent elements”*. The different landscape types located in the Study Area are listed below and illustrated in Figure 4.2.

#### *Dumfries and Galloway*

- Middle Dale (Valley)
- Upland Glens
- Foothills/ Foothills with Forest
- Southern Uplands/ Southern Uplands with Forest

#### Borders

- Southern Uplands Type with Scattered Forest

#### South Lanarkshire

- Southern Uplands
- Upland Glen

## 4.6 Key Visual Qualities of the Study Area (Figure 4.3)

### 4.6.1 Visual Spaces and Viewpoints

The visual spaces which divide the Study Area and key viewpoints are indicated in Figure 4.2. This information is indicative only at this project stage and has been prepared following a number of site visits.

### 4.6.2 Description of Visibility

Visual appraisal is based on a grading of degrees of visibility, from “*not visible*” to “*fully open views*”. The initial visual appraisal of the route options as reviewed in Chapter 5.0 has been prepared using the following categories:

**No view:** or difficult to perceive

**Glimpse View:** a transient view or distant view of part of the site or development in the context of a wider view;

**Partial view:** a clear view of part of the site or development; a partial view of most of it; or a distant view in which the site or development forms a relatively small proportion of a wider view;

**Open view:** a panoramic view of most of the site or development, occupying most of the field of vision.

### 4.6.3 Visual receptors

The main visual receptors located in the Study Area are residential, recreational (users of public footpaths, golf course etc), visitors (to Moffat) and travellers (motorway, A701, minor roads).

The sensitivity of visual receptors and views will be dependent on: -

- *“The location and context of the viewpoint;*
- *The expectations and occupation or activity of the receptor;*
- *The importance of the view (which may be determined with respect to its popularity or number of people affected, its appearance in guidebooks, on tourist maps, and on the facilities provided for its enjoyment and references to it in literature or art).” (LI, 2002).*

## 4.7 Protected areas and Features (Figure 4.1)

### 4.7.1 Nature Conservation

The following international and national designated areas are located within the Study Area

- Tweedsmuir Site of Special Scientific Interest (SSSI)<sup>7</sup>
- River Tweed Special Area of Conservation (SAC)<sup>8</sup>/SSSI
- Moffat Hills SAC/SSSI

The Tweedsmuir Hills SSSI covers a high range of Silurian Hills at the headwaters of the River Tweed and Megget Water. The area has relatively intact upland communities, including a range of uncommon artic-alpine plant species, and an important bird community. Breeding birds include common sandpiper, curlew, dunlin, golden plover, ring ouzel, dipper and red grouse. Several specially protected (Schedule 1) bird species occur, either as breeders, in winter or on passage.

The River Tweed SAC and SSSI are protected as a prime example of a “*whole river system*”. The river supports other qualifying features such as in-river *Ranunculus* (water crowfoot) beds, salmon, otters, rare plants, rare fish and unusual assemblages of invertebrates. The designated SAC area encompasses the source of the River Tweed at Tweed’s Well.

The Moffat Hills SAC and SSSI is an upland massif of Silurian greywackes and shales that forms a watershed between the Tweed and Annan river systems. The area has a valuable upland bird community and supports a wide range of upland plant communities including a rich assemblage of montane and sub-montane plant species. The site is also noted for its glacial geological and geomorphological interest.

The following local wildlife sites and local nature reserves have been identified at this stage of the study

- Holehouse Linn - important for its rich bryophyte flora, which includes rare liverworts
- Holehouse Linn/ Harley Crag- local red squirrel site
- Fala Moss north of Earlshaugh - important for its peatland and associated vegetation
- Dyke Farm - Local Nature Reserve

<sup>7</sup> National designation afforded protection under the Wildlife and Countryside Act, 1981 and the Nature Conservation (Scotland Act), 2004.

<sup>8</sup> European designation under the Conservation ( Natural Habitats & c ) Regulations, 1994

#### 4.7.2 Cultural Heritage

Historic Scotland, Scottish Borders Council (SBC), Dumfries and Galloway Council (DGC) and West of Scotland Archaeology Service (WoSAS) have supplied digital baseline information on known cultural heritage resources recorded within a search area of 375km<sup>2</sup> (NGRs NT 000 000 - 000 250 - 150 250 - 150 000).

Within the search area, designated cultural heritage features consist of:

- 47 Scheduled Ancient Monuments of national importance and with statutory protection;
- 149 Listed Buildings with statutory protection (8 Category A buildings of national importance; 72 Category B buildings of regional importance, 69 Category C(s) buildings of local importance);
- 1 Outstanding Conservation Area of national importance and with statutory protection, at Moffat (within which many of the Listed Buildings are located);
- 4 non-Inventory designed landscapes of at least regional /local importance;
- 2 Archaeologically Sensitive Areas of regional importance (designated by Dumfries and Galloway Council).

In addition, local authority Sites and Monuments Records (SMRs) contain details of approximately 800 undesignated sites and monuments of archaeological interest present within the search area. Of these, there are:

- 112 sites that WoSAS and DGC consider to be of national importance;
- over 250 sites of regional or regional/local importance (based upon levels of importance assessed by WoSAS and DGC, and upon appraisal of unclassified SBC data).

These resources reflect human occupation and exploitation of the landscape since early prehistory. They include prehistoric burial sites and settlements; Roman military forts, camps and roads; medieval or later rural aristocratic and farming settlements; and historic buildings and designed landscapes dating mainly to within the last 300 years.

It is certain that other, as yet undetected, remains of archaeological interest are present within the search area.

#### 4.7.3 Recreation Features/ Routes

The main recreational features and attractions located in the Study Area are as follows: -

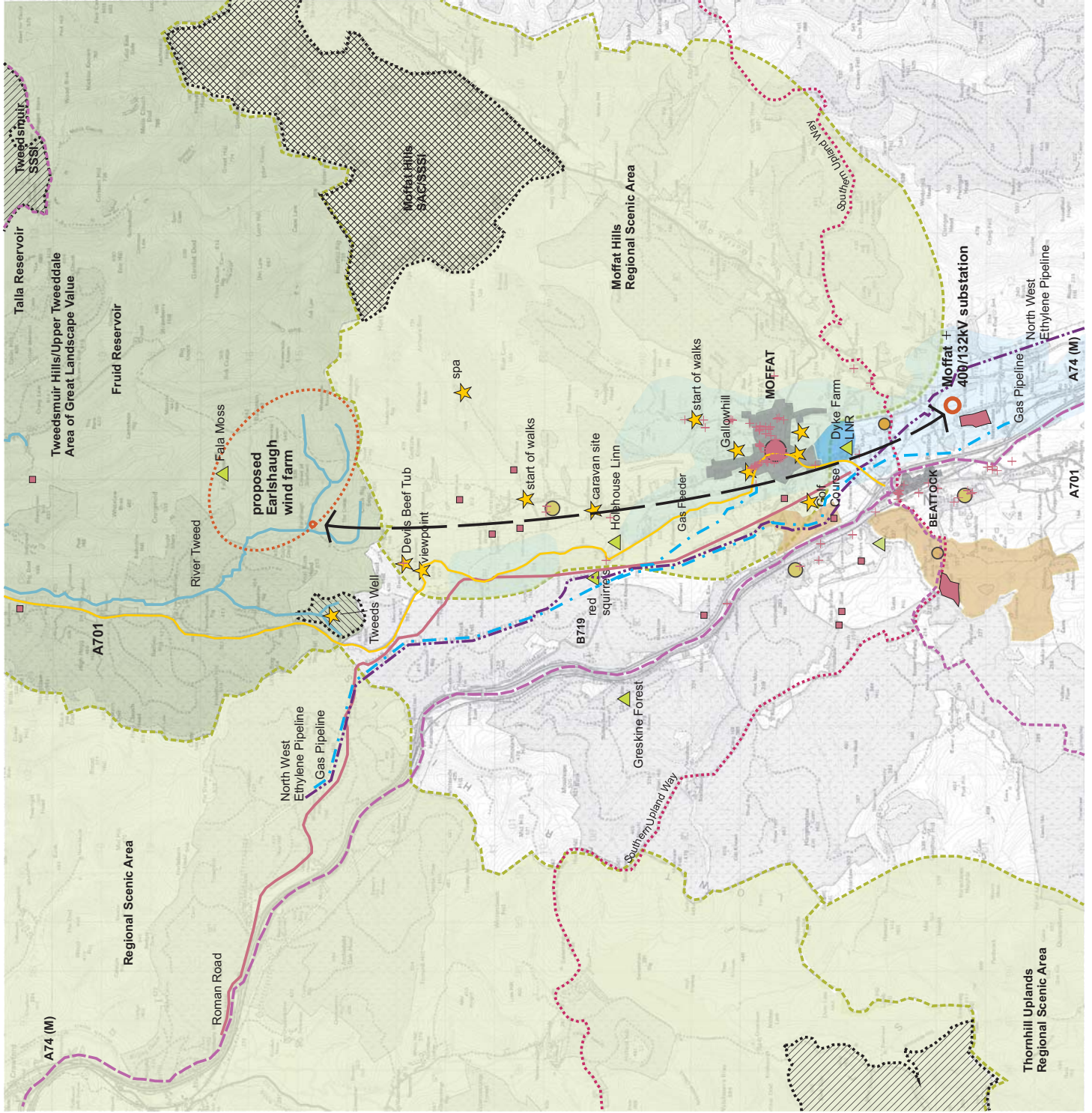
- A701 is a designated tourist route passing through Moffat to reach Edinburgh
- Moffat, important tourist destination/ number of hotels/ Moffat Park
- Devils Beef Tub - spectacular viewpoint; number of informal stopping places along the A701
- A701 layby - Viewpoint and start of circular walk to Annanhead Hill, Great Hill, Chalk Rig Edge, down the valley of Tweed Hope to Ericstane
- Various springs around Ericstane – the reason for growth of Moffat as a spa resort, for example; Chalybeate Spring contained by a beehive stone structure, famed for its healing powers
- Hartfell summit, 808m - destination for many walks; historic associations as reputed to be the seat of Merlin.
- Source of the River Tweed
- Moffat Golf Course
- Caravan Sites to north and south of Moffat
- Southern Upland Way- national cross country walking route
- Numerous walks around Ericstane, Ericstane Hill, Chalk Rig Edge, Hart Fell, Annan Water Hall
- Walks along the River Annan, Birnock Water and up Gallowhill located to the north of Moffat
- National and local cycle routes

#### 4.7.4 Other

Other features of note within the Study area include the alignment of the following major pipelines, which have associated safety and clearance zones:

- North West Ethylene Pipeline
- National Gas Pipeline
- Regional Gas Pipeline to Moffat

In addition, the Scottish Border Local Plan indicates a civil aviation navigation beacon on Broad Law, approximately 3km north of Talla Reservoir.



**Key**

- Regional Scenic Area
- Area of Great Landscape Value
- Site of Special Scientific Interest
- Special Area of Conservation
- River Tweed SAC/SSSI
- Local Nature Conservation Sites/Reserves
- Moffat Conservation Area (Outstanding)/Listed Buildings
- Scheduled Ancient Monument
- Archaeologically Sensitive Area
- Non Inventory Gardens & Designed Landscapes
- Closed Landfill Site
- Protecting Groundwater Quality (Boreholes/Catchments)
- Protecting Groundwater Quality (Vulnerability)
- National Cycle Network (Route 74)
- Other Cycle Routes
- Southern Upland Way
- Tourist Route/Recreational attractions
- North West Ethylene Pipeline
- National Gas Pipeline & Feeder to Moffat



Based upon OS 1:50000 map with permission of HMSO. Crown copyright reserved.  
 Unauthorised reproduction infringes copyright.

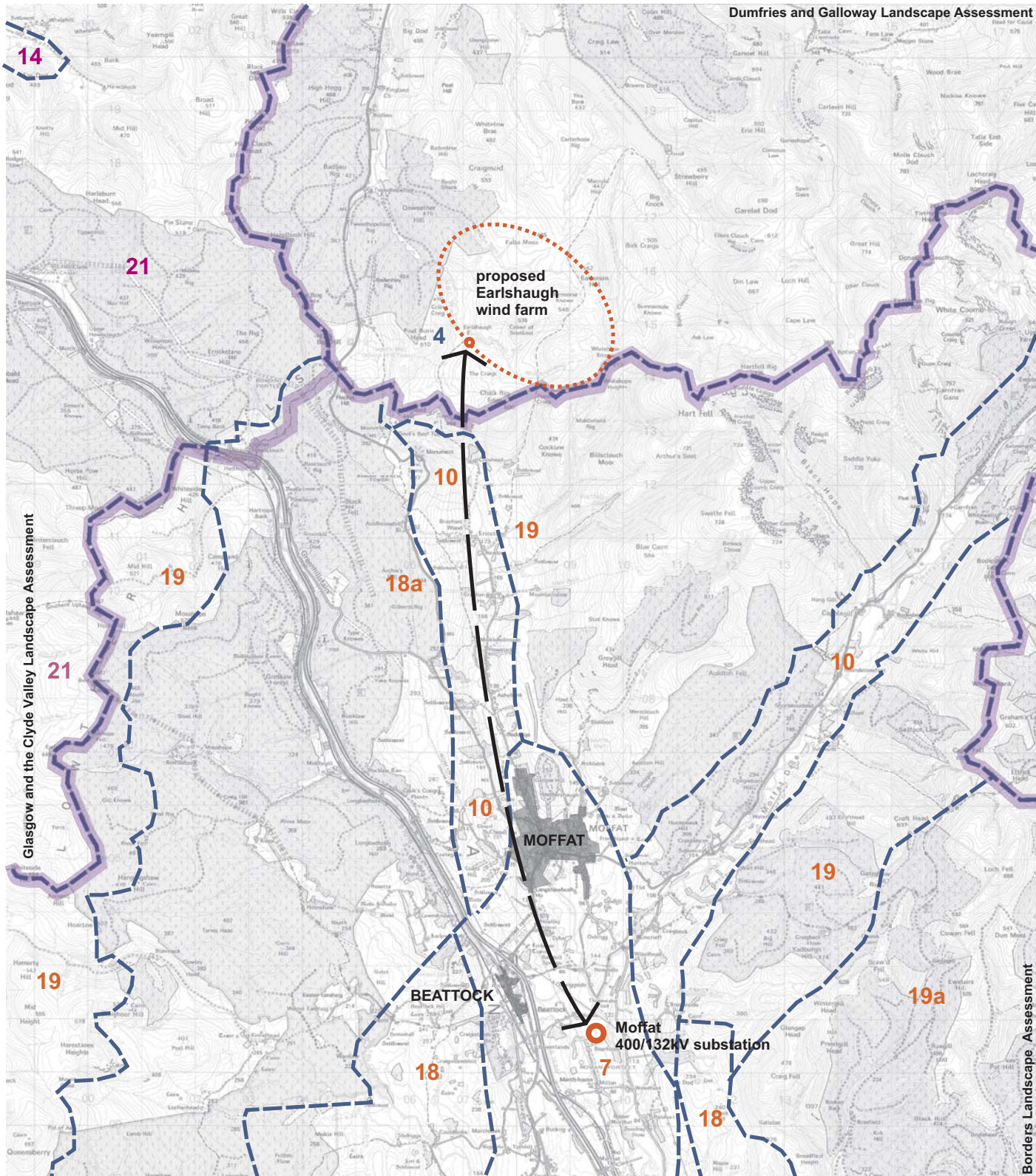
**Figure 4.1**

**Title: DESIGNATED AREAS, FEATURES AND INFRASTRUCTURE**  
 Project: Proposed Grid Connection to Earlishaugh Windfarm

Scale: Bar Scale Date: October 2007







Glasgow and the Clyde Valley Landscape Assessment

**14/ 21** Upland Glen/Southern Uplands

Borders Landscape Assessment

**4** Southern Uplands Type with Scattered Forest

Dumfries and Galloway Landscape Assessment

**7** Middle Dale (Valley)

**10** Upland Glens

**18/ 18a** Foothills/ Foothills with Forest

**19/ 19a** Southern Uplands/ Southern Uplands with Forest

Based upon OS 1:50000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 4.2**

Title: **LANDSCAPE CHARACTER TYPES**

Project:

Proposed Grid Connection to Earlshaugh Windfarm

Scale: 1:100,000 @ A4

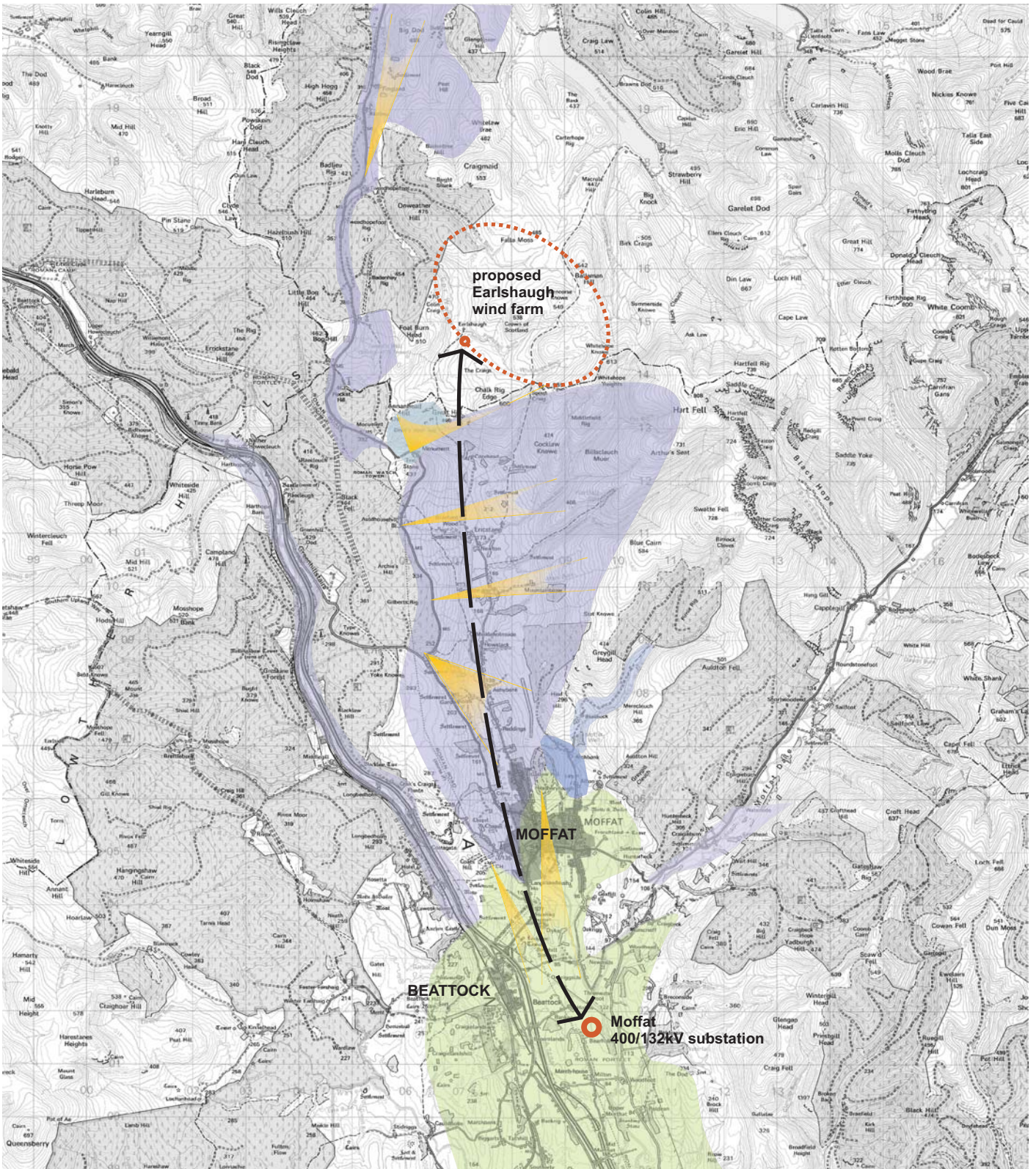
Date: October 2007

Prepared by Environmental Designworks for SP Transmission Ltd

**Environmental Designworks**  
Landscape Architecture + Planning

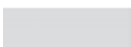






Based upon OS 1:50000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Key**



Visual spaces (indicative only)



Key views



0 5km

**Figure 4.3**

Title:  
**VISUAL SPACES AND KEY VIEWS IN STUDY AREA  
(INDICATIVE ONLY)**

Project:  
Proposed Grid Connection to Earlshaugh Windfarm

Scale: 1:100,000 @ A4

Date: October 2007

Prepared by Environmental Designworks for SP Transmission Ltd

**Environmental Designworks**  
Landscape Architecture + Planning

tel/fax:0131 662 0359



## 5.0 Route Options and Preferred Route Alignment

### 5.1 Preliminary Environmental Review

Following a desk review of environmental baseline data for the study area and a number of site visits, broad route corridors were initially identified between the proposed windfarm at Earlshaugh and substation at Moffat. This followed the approach to routeing an overhead line as outlined in Chapter 3. This process was reiterated and refined to identify the proposed route options as indicated in Figure 5.1 and finally a Preferred Route. The Preferred Route alignment is indicated in Figure 5.2 and illustrated on aerial photographs in Figures 5.3 a-d.

A number of route options were identified, reviewed and rejected in the route selection process. The developed route options as illustrated in Figure 5.1, have been subjected to a preliminary environmental appraisal, which is detailed in Appendix B. This appraisal was undertaken qualitatively, employing specialist professional judgement drawing upon a detailed knowledge of the study area, the baseline environmental information collated to date and understanding of the potential environmental effects of overhead transmission lines.

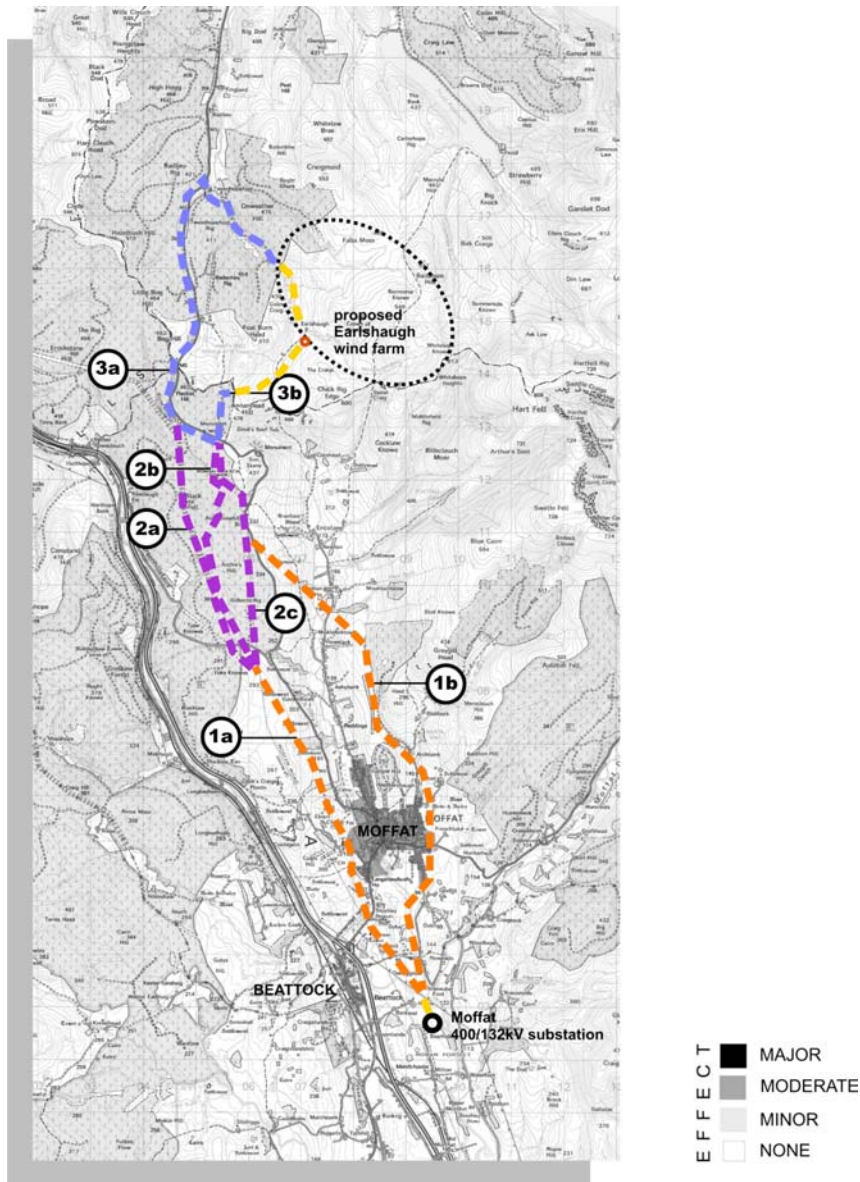
The key environmental considerations used for the comparison of route options have been: -

- Landscape: landform, landcover, landuse, designation, landscape character (SNH) and summary of effect
- Visual: visibility, receptor type and summary of effect
- Protected Areas & Features: nature conservation, heritage, recreational attractions/ routes and any other important features.

Table 2 summarises the findings of the Preliminary Environmental Review of the route options as a simple matrix, which provides a preliminary ranking of the potential effect of each route option. This allowed a concise recording of the comparative assessment of the route options undertaken at this project stage. The table is supported by the following text, which explains the key differences between the route options leading to the identification of the Preferred Route.

**Table 2:** Summary of Preliminary Environmental Review of Route Options

| SUMMARY of PRELIMINARY ENVIRONMENTAL REVIEW | route options |        |       |       |       |       |       |       |       |       |       |
|---------------------------------------------|---------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                                             | 1a            |        | 2a    |       |       | 2b    |       | 2c    |       | 3a    |       |
| LANDSCAPE                                   | Light         | Dark   | Light | Light | Light | Light | Light | Light | Dark  | Dark  | Dark  |
| VISUAL                                      | Light         | Dark   | Light | Light | Dark  | Dark  | Dark  | Dark  | Dark  | Light | Light |
| NATURE CONSERVATION                         | White         | White  | White | White | White | White | White | White | Dark  | Dark  | Dark  |
| CULTURAL HERITAGE                           | Light         | Dark   | Dark  | Dark  | Dark  | Dark  | Black | Dark  | Light | Light | Light |
| RECREATIONAL FEATURES                       | Dark          | Dark   | White | White | White | White | Dark  | Dark  | Dark  | Dark  | Dark  |
| OTHER FEATURES                              | Dark          | Dark   | Black | Dark  | Dark  | White | White | White | White | White | White |
| APPROXIMATE LENGTH                          | 8km           | 10.5km | 5km   | 4.5km | 4km   |       |       |       | 7km   | 3km   |       |



## 5.2 Landscape Character

Routes 1a and b pass through areas of similar landform, landcover and landuse, and through the Moffat Hills Regional Scenic Area. Route Option 1b passes to the south of Granton House a Non Inventory Designed Landscape located adjacent the River Annan. Overall, it is considered that Route 1b passes through an area of greater landscape sensitivity with areas of a remote and undisturbed quality. This landscape sensitivity increases northwards along the Annandale Valley and lead to the rejection of a number of route options at an early stage of the project.

Routes 2a, b and c all pass through an area of coniferous plantation. A detailed review of aerial photographs covering this area allowed the identification of these routes which pass through existing clearings and areas of recent felling. Route 2c passes through the western edge of the designated Moffat Hills RSA.

Route 3a parallels the western side of the A701 to Tweedhopefoot. The route is then aligned along an existing forest track and open upland to reach the proposed windfarm at Earlishaugh. The A701 is a designated tourist route and on crossing the local authority boundary into the Scottish Borders passes through the Tweedsmuir Hills/ Upper Tweeddale Area of Great Landscape Value. Route 3b is aligned across an area of felled coniferous plantation to the north of the A701 and then open upland. In summary, the landscape character through which Route 3a and 3b are aligned is similar and both cross the Tweedsmuir Hills/ Upper Tweeddale Area of Great Landscape Value to reach the proposed windfarm.

### 5.3 Visual Effect

Partial and open views would be afforded of both Routes 1a and 1b and would be viewed by similar types of receptors (residential, recreation and travellers). Overall, it is considered that the potential visual effect to the character of existing views and loss of visual amenity would be greater for Route 1b.

The visibility of Routes 2a, b and c will be limited to primarily glimpse views by the alignment through coniferous plantation. The greatest effect will be associated with the alignment of Route 2b and 2c, which parallel part of the Roman Road Scheduled Ancient Monument. Visitors to this cultural heritage site will be afforded open views of the proposed overhead line.

Route 3a will be visible to travellers along the A701, which is a designated tourist route. Route 3b crosses the A701 to the west of the Devils Beef Tub where there is a viewpoint and layby for visitors. Recreational users of the footpath to Annanhead Hill will be afforded open views of both Routes 3a and 3b as it crosses the open upland to reach the proposed windfarm. Overall, it is considered that the potential visual effect of Route 3a in terms of change to character of views and loss of visual amenity will be slightly greater as the route is aligned parallel to the A701 designated tourist route.

### 5.4 Protected Areas & Features

#### 5.4.1 Nature Conservation

Route 1a would pass to the west of Dyke Farm Local Nature and Holehouse Linn Reserve, an area of woodland to the north of Moffat. The southern part of Route 1a would cross the Evan Water. Route 1b would cross the Evan Water and River Annan. Neither Route 1a nor 1b have a direct effect on any designated national or local nature conservation area.

Routes 2a, b and c pass through open corridors or felled areas within coniferous plantations. None of the routes would have a direct effect on any designated nature conservation area.

Route 3a and b pass along the edge of coniferous plantations. Route 3a passes to the west of the designated SAC encompassing Tweeds Well at the head of the River Tweed. It is proposed that Route 3a at Tweedhopefoot would pass along the verge of an existing forest track eastwards to reach the proposed windfarm at Earlishaugh. This route would cross open ground and would require the crossing of tributaries of the River Tweed SAC/SSSI. Route 3b would cross open ground and also require the crossing of tributaries of the River Tweed SAC/SSSI. At this project stage though, both routes have been ranked with a similar effect on designated nature conservation areas.

#### 5.4.2 Cultural heritage

An overhead line along Route 1a has less potential to cause significant effects on cultural heritage than Route 1b. This is principally because there are a greater number of Listed Buildings, as well as a non-Inventory Designed Landscape, in close proximity to Route 1b. However, in either case the overhead line would need to be designed carefully to avoid significant effects on the character or setting of key cultural heritage resources. A further route option to the west of Moffat Golf Course was rejected early in the project due to the Archaeologically Sensitive Area, which encompasses the area.

Route options 2a and 2b would require the overhead line to cross the route of a scheduled Roman road at two separate locations, whereas option 2c would follow the route of the Roman Road for over 3km. For this reason route option 2c is significantly less preferable on cultural heritage grounds than options 2a or 2b. An overhead line on route options 2a or 2b would need to be designed to avoid any direct effect on the character, and to minimise the indirect effect on the setting, of the Roman road.

Of route options 3a and 3b, on current evidence neither appears significantly preferable to the other. In either case the route would need to be designed carefully to avoid significant effects arising on the character or setting of key cultural heritage resources.

#### 5.4.3 Recreation features/ routes

Route 1a and 1b would both cross over the Southern Upland Way. Route 1a would cross the A701 tourist route and pass along the eastern edge of Moffat Golf Course encompassing Coats Hill. Route 1b passes to the east of Gallowhill where there is a picnic site and car parking for walks along the Birnock Water to the north-east of Moffat. Further north the route would pass near a caravan site located at Howslack.

At this project stage the data for other walking routes has not been collated for the whole Study Area but it is appreciated from site visits and desk review of maps, that there are numerous routes crossing and aligned along the Annandale Valley. A further route option aligned along the valley floor to the west of Moffat was rejected early in the project due to the recreational routes aligned along the River Annan.

Route Options 2a and 2b would not effect any designated tourist or recreational attraction. Route 2c is aligned close to the A701 tourist route and parallels part of a footpath aligned to the south of Ericstane Hill.

Route Option 3a parallels the A701 which is a designated tourist route and passes to the west of Tweeds Well, the source of the River Tweed. A lay-by provided a stopping place for visitors to this area. Route 3b would cross the A701 and passes to the west of Devils Beef Tub. A lay-by and viewpoint is provided on the A701 for visitors to stop and look at the spectacular natural feature. A footpath crosses this area leading to Annanhead Hill and Great Rigg and forms part of a circular route, which is aligned eastwards along the high ridge and then down to Ericstane and back up the valley side to Ericstane Hill.

#### 5.4.4 Other Features

The southern part of Route 1a is aligned to the west and east of the North West Ethylene Pipeline and would cross at one point. The National Gas Pipeline is aligned to the west of Route Option 1a. Further north Route 1a would cross the North West Ethylene Pipeline and National Gas Pipeline at one point, and the Regional Gas Feeder Pipeline to Moffat in two places. The southern part of Route 1b would cross the North West Ethylene Pipeline. Both routes are aligned through an area identified in the Local Plan for the protection groundwater.

Route 2a is aligned parallel to the North West Ethylene and National Gas Pipeline routes along the corridor cleared for these pipelines through the coniferous plantation. Route 2b is aligned further to the west of both in pipelines along a separate corridor and clearings through the woodland and then crosses to the east. Route 2c passes through an area identified in the Local Plan for the protection groundwater encompassing an area to the south of Ericstane Hill.

No other features have been identified at this project stage for Route Options 3a and 3b.

## 5.5 Preferred Route Alignment

The Preferred Route as indicated in Figures 5.2 and 5.3, is considered to have on balance the least likely adverse environmental effects, whilst being technically feasible and economically viable. The approximate length of the Preferred Route alignment comprising of Route Option 1a, 2b and 3b is 15km.

At this project stage, the Preferred route should still be viewed as a corridor within which the detailed route alignment can be developed through localised deviations to avoid or reduce identified effects during the detailed environmental assessment process. Chapter 6 outlines how the Preferred Route will become the Proposed Route through the public consultation process.

From Moffat substation, the detailed routing at this project stage seeks to minimise adverse effects through the following: -

### Route 1a

- proposed underground cable to exit substation and cross the Evan Water.
- a direct route to the north west across the valley floor avoiding the North West Ethylene Pipeline and Barnhill Woods. This route would cross an undesignated Regional Site of Archaeological Importance.
- cross the A701 between Lochhouse Tower and south of Dyke Farm properties
- alignment to the north of existing properties, crossing rising ground an angle screened in part from A701
- alignment to the west of an existing mature deciduous woodland
- alignment to the east of Moffat Golf course
- alignment midway along valley side passing through existing clearings in woodland allows for majority of views afforded from Moffat to be screened by existing topography or backgrounded.
- route screened from the A701 and away from the Roman Road SAM and National Pipelines
- crossing of the Roman Road SAM, north west ethylene pipeline and gas pipelines to the south of the gas valve compound
- passing through an existing clearing in the coniferous plantation to achieve a direct crossing of the B719



**Route 2b**

- alignment through coniferous plantations using existing clearing and areas recently felled whilst fitting the natural topography, allows route to be screened from the A701, and avoid the Roman Road SAM and National Pipelines

**Route 3a**

- alignment through coniferous plantation using existing clearing and areas recently felled whilst fitting the natural topography.
- direct crossing of the A701 tourist route
- proposed underground cable route to cross open upland to the grid connection substation for the windfarm. Detailed alignment to follow the new access road for the proposed windfarm

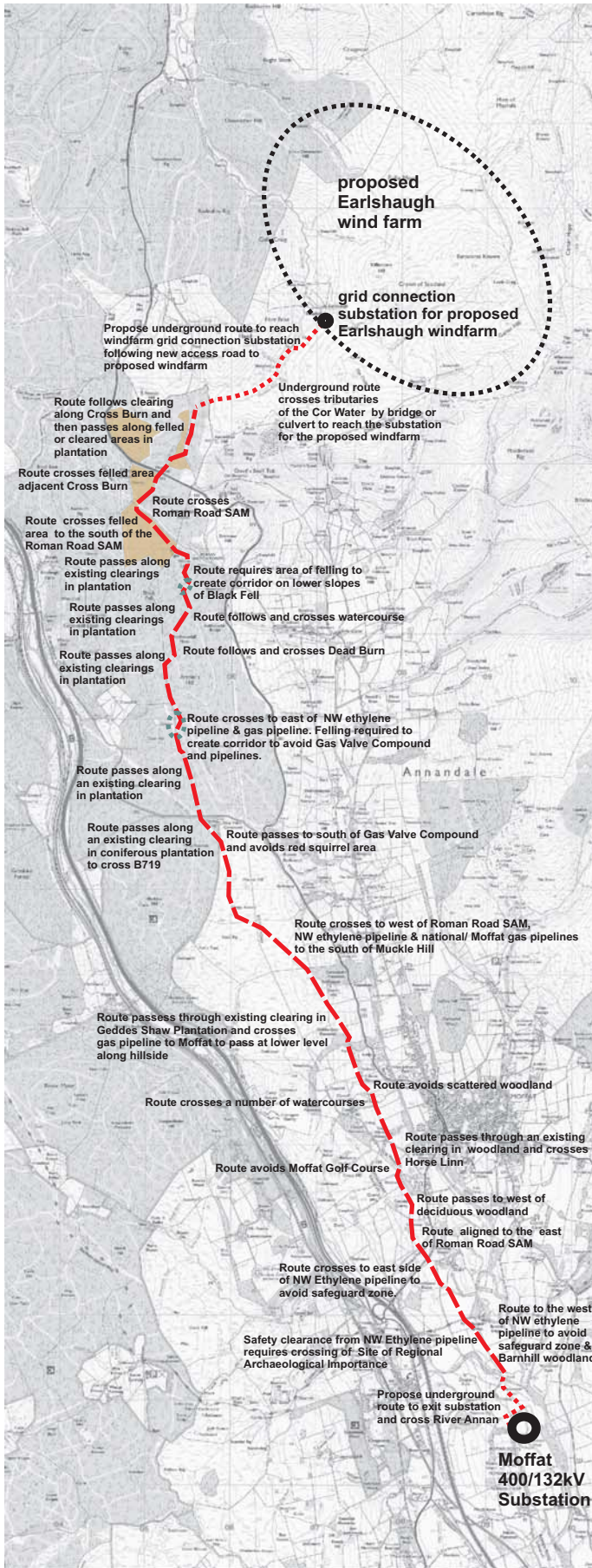
**5.5. Potential Effects and Proposed Survey Work**

At this initial stage of the environmental impact assessment process, a preliminary list of potential effects associated with the Preferred Route, and further desk and field study work envisaged for the next project stages has been placed for information in Appendix C and D.









**Key**

- - - preferred route corridor for the proposed Heavy Duty Flat Formation 132kV grid connection
- . . . . . proposed underground cable route section for grid connection

**Note:** Confirmation of windfarm substation location and proposed access provided by Terence O'Rourke Dwg 760566/001A

Based upon OS 1:25000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 5.2**

Title:  
**PREFERRED ROUTE**

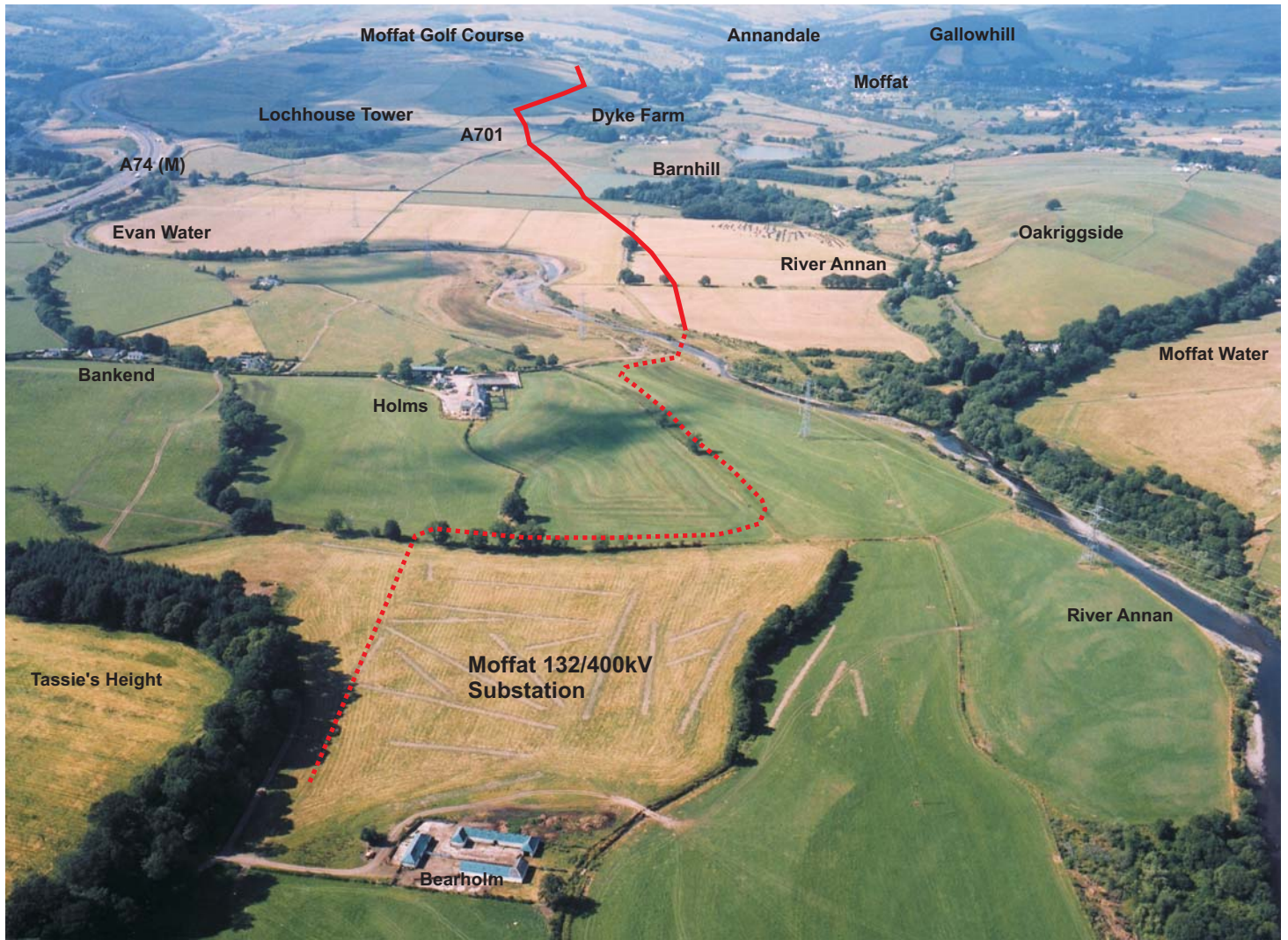
Project:  
**Proposed Grid Connection to Earlishaugh Windfarm**

Scale: Bar Scale

Date: October 2007







**Aerial Photograph No 1: Moffat 132/400kV Substation**

Based upon OS 1:25000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 5.3a**

Title:  
**PREFERRED ROUTE- AERIAL PHOTOGRAPHS  
1 of 4 (Moffat to Earlsbaugh)**

Project:  
**Proposed Grid Connection to Earlsbaugh Windfarm**

Scale: NTS

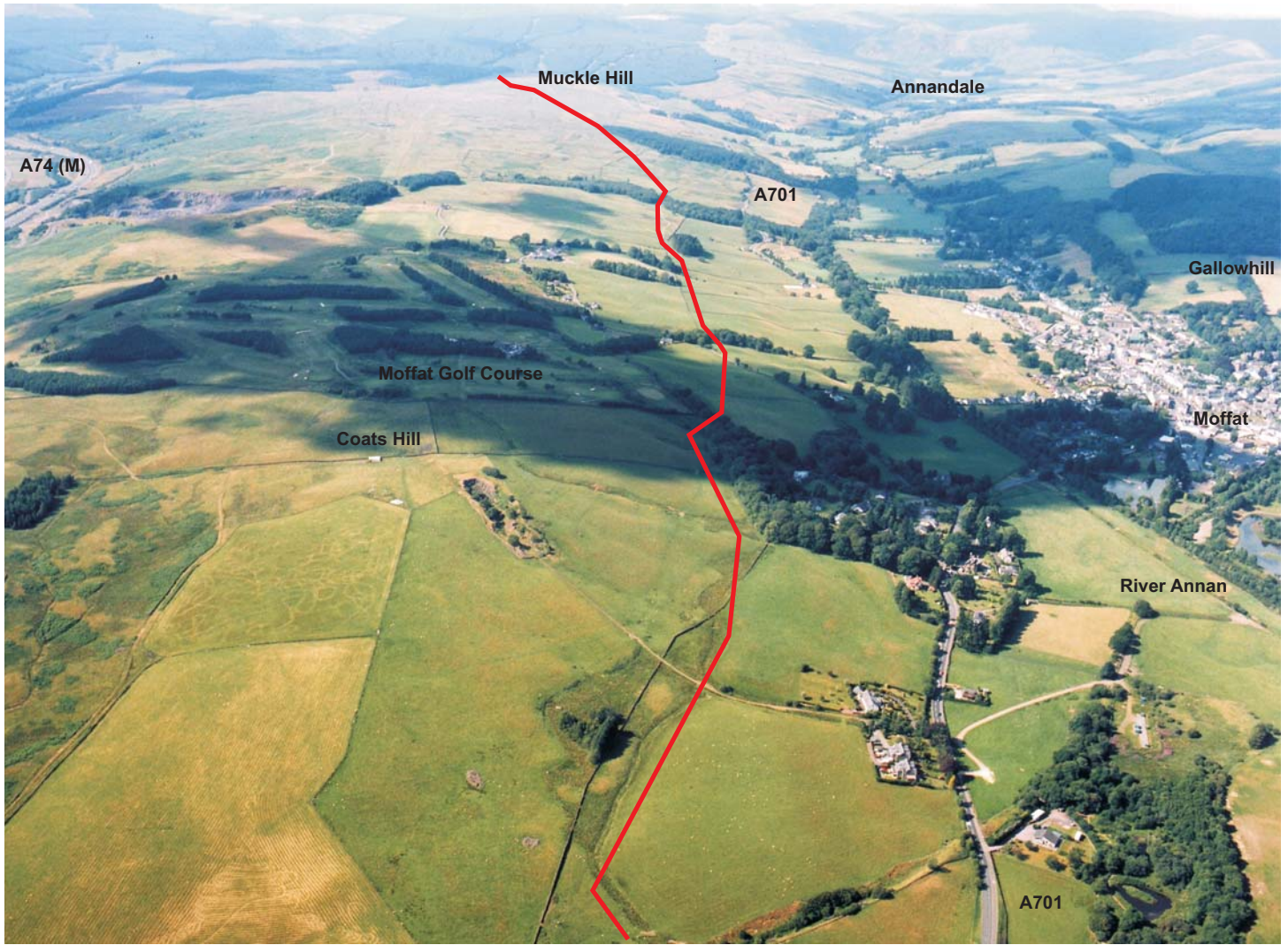
Date: October 2007

**Key**

- preferred route corridor for the proposed Heavy Duty Flat Formation 132kV grid connection
- ..... proposed underground cable route section for grid connection







Aerial Photograph No 2: Coats Hill

Based upon OS 1:25000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

Figure 5.3b

**Key**

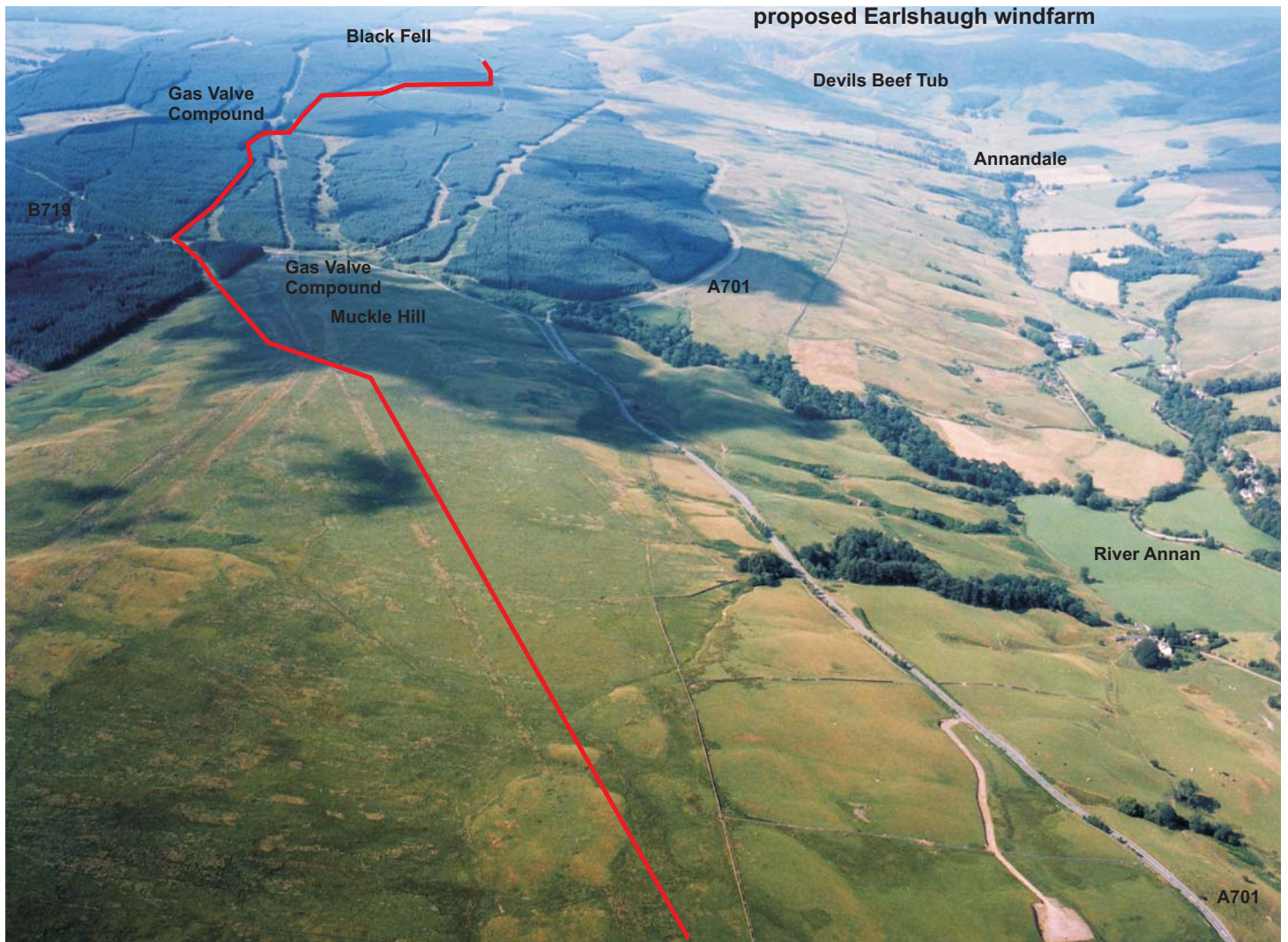
- preferred route corridor for the proposed Heavy Duty Flat Formation 132kV grid connection
- ..... proposed underground cable route section for grid connection

Title:  
**PREFERRED ROUTE- AERIAL PHOTOGRAPHS  
 2 of 4 (Moffat to Earlsbaugh)**  
 Project:  
 Proposed Grid Connection to Earlsbaugh Windfarm

Scale: NTS

Date: October 2007





**Aerial Photograph No 3: Muckle Hill**

Based upon OS 1:25000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 5.3c**

**Key**

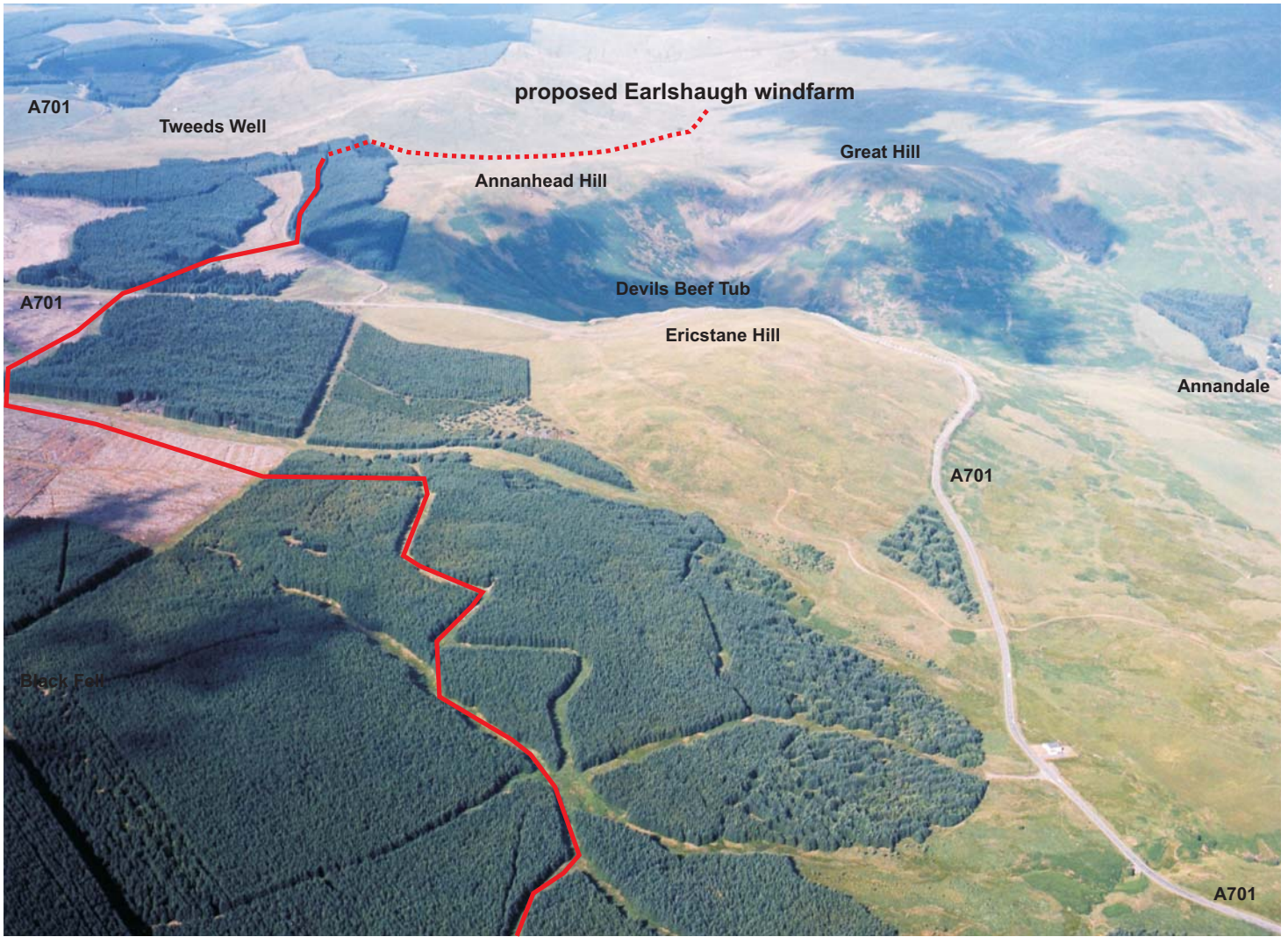
- preferred route corridor for the proposed Heavy Duty Flat Formation 132kV grid connection
- ..... proposed underground cable route section for grid connection

Title:  
**PREFERRED ROUTE- AERIAL PHOTOGRAPHS  
 3 of 4 (Moffat to Earlshaugh)**  
 Project:  
**Proposed Grid Connection to Earlshaugh Windfarm**

Scale: NTS

Date: October 2007





**Aerial Photograph No 4 : Proposed Earlshaugh Windfarm**

Based upon OS 1:25000 map with permission of HMSO. Crown copyright reserved. SP Power Systems Ltd Reg sc21584. Unauthorised reproduction infringes copyright.

**Figure 5.3d**

Title:  
**PREFERRED ROUTE- AERIAL PHOTOGRAPHS  
 4 of 4 (Moffat to Earlshaugh)**  
 Project:  
 Proposed Grid Connection to Earlshaugh Windfarm

Scale: NTS

Date: October 2007

**Key**

- preferred route corridor for the proposed Heavy Duty Flat Formation 132kV grid connection
- ..... proposed underground cable route section for grid connection



## 6.0 Way Forward

### 6.1 Consultation

This Public Consultation Document has been circulated to statutory consultees and other appropriate agencies and bodies to provide an understanding of the proposal and seek comment regarding the Preferred Route. In addition to this document, a Public Exhibition illustrating much of the information contained in this document will be held at Tweedsmuir on the 9/10<sup>th</sup> November 2007, which will then be placed on display at Moffat Library to allow further opportunity to see the proposals and comment as appropriate. Copies of the Consultation Document will also be made available to the public for review during normal working hours at the following locations: -

**SP EnergyNetworks**, New Alderston House, Dove Wynd, Strathclyde Business Park, Bellshill, ML43FF  
**Moffat Library**, Town Hall, High Street, Moffat DG10 9HF

**Dumfries and Galloway Council**, Planning Building Control and Estates, Council Offices, Dryfe Road, Lockerbie, DG11 2AS

**Scottish Borders Council**, Council Headquarters, Newton St Boswells, Melrose, TD6 0SA

The Consultation Document is also available on CD ROM from SP EnergyNetworks at the above address and can be accessed on the ScottishPower website:

<http://www.sppowersystems.co.uk/networkservices/performance.asp>

If you would like to comment on any aspect of this scheme, please contact the **Earlshaugh Project Manager** either by email [earlshaugh.projectmanager@sppowersystems.com](mailto:earlshaugh.projectmanager@sppowersystems.com) or by post at the above **SP EnergyNetworks** address.

### 6.2 Next Stage

Following receipt of comments and any additional information relating to the Study Area, SPT will review the consultation responses and either confirm, modify or amend the Preferred Route as required. The outcome of this review process will be the confirmation of a final proposed grid connection route corridor to the proposed windfarm at Earlshaugh. The Proposed Route will then be carried forward to detailed environmental impact assessment and discussion with relevant landowners.

### 6.3 Scoping

Following this consultation stage, it is SPT's intention to submit a Scoping Report to the Scottish Ministers with a written request under Regulation 7 of the Electricity Works (Environmental Impact Assessment)(Scotland) Regulations 2000 for their opinion as to the information to be provided in the Environmental Statement that SPT intends to prepare. The Scoping Report will set out the proposed structure and content of the Environmental Statement and identify the possible effects on the environment of the proposed route alignment. The Scoping Report will reference this Consultation Document.

### 6.4 Environmental Statement

Following receipt of the Scoping Opinion as to the proposed information to be provided in the Environmental Statement, the Project Team will undertake the required specialist studies and detailed environmental impact assessment for the proposed route. In undertaking the detailed environmental and technical assessment, localised deviations from the proposed route maybe identified in order to mitigate local impacts.

The Environmental Statement will identify and describe in detail the environmental effects of the proposed overhead line construction and operation, and will identify all appropriate mitigation measures. Computer aided techniques will be used to assist the evaluation of the visual effects of the proposed route.

The completed Environmental Statement will accompany the Section 37 application for the proposed overhead line and copies will be available for public comment.

*Environmental Designworks*

Landscape Architecture and Planning

259 – PA/BF/AD/AS - October 2007









## Appendix A: Initial Information Collection

| Consultees                                                                                           | Timescale/ Response                                                    |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Dumfries and Galloway Council<br>Planning, Building Control and Estates,                             | ✓ 22-1-07<br>Tel Con (Local Plan Officer)                              |
| Dumfries and Galloway Council Archaeologist                                                          | ✓ 26-1-07                                                              |
| Dumfries and Galloway Access and Rangers                                                             | 22-1-07<br>Tel Con (CW)<br>✓ 26-1-07<br>Letter                         |
| Scottish Borders Council                                                                             | ✓ 22-1-07<br>Tel Con (AS)                                              |
| Scottish Borders Council<br>Access Officer                                                           | ✓ 22-1-07<br>Tel Con (EN)<br>✓ 26-1-07<br>Letter                       |
| Scottish Borders Council<br>Access Officer - Archaeologist                                           | ✓ 26-1-07                                                              |
| South Lanarkshire Council                                                                            | ✓ 22-1-07<br>Tel Con (WT)                                              |
| South Lanarkshire Council<br>Access Officer                                                          | ✓ 23-1-07<br>Tel Con (AB)<br>✓ 26-1-07<br>Letter                       |
| Scottish Natural Heritage – Information gathered from Windfarms Scoping Reports/ Published Documents | ✓ 9-3-07<br>Tel Con (JW)                                               |
| Historic Scotland                                                                                    | ✓ 26-1-07<br>Letter                                                    |
| <b>Other Consultees</b>                                                                              |                                                                        |
| National Grid- Transco                                                                               | ✓ 23-1-07<br>Tel Con (NB)<br>✓ 26-1-07<br>Letter<br>✓ 3-5-07<br>Letter |
| Shell UK Ltd                                                                                         | ✓ 22-1-07<br>Tel Con (RP)<br>✓ 26-1-07<br>Letter                       |
| Forestry Commission                                                                                  | ✓ 22-1-07<br>Tel Con (JD)                                              |
| West of Scotland Archaeology Service                                                                 | ✓ 26-1-07<br>Letter                                                    |



## Appendix B: Preliminary Environmental Review

### Significance of Effects

The relative significance of effects at this preliminary project stage of the different route options has been assessed using the following terms:

**Major** - a fundamental change to the environment

**Moderate** - a material but non-fundamental change to the environment;

**Minor** - a detectable but non-material change to the environment.

**None** - no detectable change to the environment.

| Route Section                               | 1a (8km)                                                                                                                                                                                                       | 1b (10.5km)                                                                                                                                                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landscape</b>                            |                                                                                                                                                                                                                |                                                                                                                                                                                                                        |
| landform                                    | valley floor, valley slope, upland valley/hills                                                                                                                                                                | valley floor, valley slope, upland valley/hills                                                                                                                                                                        |
| landcover                                   | grassland/ rough grassland                                                                                                                                                                                     | grassland/ rough grassland                                                                                                                                                                                             |
| landuse                                     | grazing/ golf course/scattered properties                                                                                                                                                                      | grazing/ scattered properties                                                                                                                                                                                          |
| designation                                 | Moffat Hills RSA                                                                                                                                                                                               | Moffat Hills RSA<br>NIDL- Granton House                                                                                                                                                                                |
| character (SNH)                             | Middle Valley/ Upland Glen/ Foothills with Forest                                                                                                                                                              | Middle Valley/ Upland Glen/ Foothills with Forest                                                                                                                                                                      |
| effect                                      | <b>moderate/minor</b>                                                                                                                                                                                          | <b>moderate</b>                                                                                                                                                                                                        |
| <b>Visual</b>                               |                                                                                                                                                                                                                |                                                                                                                                                                                                                        |
| visibility                                  | partial/open                                                                                                                                                                                                   | partial/open                                                                                                                                                                                                           |
| receptor type                               | residential, recreational, travellers, visitors                                                                                                                                                                | residential, recreational, travellers, visitors                                                                                                                                                                        |
| effect                                      | <b>moderate/minor</b>                                                                                                                                                                                          | <b>moderate</b>                                                                                                                                                                                                        |
| <b>Protected Areas &amp; Features</b>       |                                                                                                                                                                                                                |                                                                                                                                                                                                                        |
| nature conservation (designated areas only) | <b>none</b> (no direct)<br>crosses Evan Water                                                                                                                                                                  | <b>none</b> (no direct)<br>crosses Evan Water and River Annan                                                                                                                                                          |
| cultural heritage                           | <b>moderate/ minor</b> (depends on design and assumes no direct impacts on SAMs or LBs)<br>2 SAMs and one Category B Listed Building close to route. At least 8 undesignated features on or adjacent to route. | <b>moderate</b> (depends on design and assumes no direct impacts on SAMs or LBs)<br>2 SAMs, 8 Listed Buildings (3 category A), 1 non-inventory designed landscape and at least 5 undesignated sites adjacent to route. |
| recreational features/ routes               | <b>moderate</b><br>SUW /A701 tourist route/ golf course/ footpath                                                                                                                                              | <b>moderate</b><br>SUW / footpaths/ caravan site                                                                                                                                                                       |
| other features                              | <b>moderate</b><br>crosses nw ethylene pipeline/gas pipeline                                                                                                                                                   | <b>moderate</b><br>crosses north west ethylene pipeline                                                                                                                                                                |

| Route Section                               | 2a (5km)                                                                                                                     | 2b (4.5km)                                                                                                                   | 2c (4km)                                                                                                                                                   |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Landscape</b>                            |                                                                                                                              |                                                                                                                              |                                                                                                                                                            |
| landform                                    | upland valleys and hills                                                                                                     | upland valleys and hills                                                                                                     | upland valleys and hills                                                                                                                                   |
| landcover                                   | coniferous plantation<br>open corridor                                                                                       | coniferous plantation<br>open corridor                                                                                       | coniferous plantation<br>open corridor                                                                                                                     |
| landuse                                     | commercial forestry                                                                                                          | commercial forestry                                                                                                          | commercial forestry                                                                                                                                        |
| designation                                 | none                                                                                                                         | none                                                                                                                         | Moffat Hills RSA                                                                                                                                           |
| character (SNH)                             | Foothills with Forest                                                                                                        | Foothills with Forest                                                                                                        | Foothills with Forest                                                                                                                                      |
| effect                                      | <b>minor</b>                                                                                                                 | <b>minor</b>                                                                                                                 | <b>minor/ moderate</b>                                                                                                                                     |
| <b>Visual</b>                               |                                                                                                                              |                                                                                                                              |                                                                                                                                                            |
| visibility                                  | glimpse                                                                                                                      | glimpse/open                                                                                                                 | glimpse/open                                                                                                                                               |
| receptor type                               | travellers/ visitors                                                                                                         | travellers/ visitors                                                                                                         | travellers/ visitor/ SAM visitors                                                                                                                          |
| effect                                      | <b>minor</b>                                                                                                                 | <b>minor/moderate</b>                                                                                                        | <b>moderate</b>                                                                                                                                            |
| <b>Protected Areas &amp; Features</b>       |                                                                                                                              |                                                                                                                              |                                                                                                                                                            |
| nature conservation (designated areas only) | <b>none</b> (no direct)                                                                                                      | <b>none</b> (no direct)                                                                                                      | <b>none</b> (no direct)                                                                                                                                    |
| cultural heritage                           | <b>moderate</b><br>route crosses route of scheduled Roman road twice (SAM Ref: 3329) and runs close to 2 undesignated sites. | <b>moderate</b><br>route crosses route of scheduled Roman road twice (SAM Ref: 3329) and runs close to 2 undesignated sites. | <b>major</b><br>route follows route of scheduled Roman road for most of length, where a signal station is also present at one point (SAM Refs: 3329-3331). |
| recreational features/ routes               | <b>none</b>                                                                                                                  | <b>none</b>                                                                                                                  | <b>moderate</b><br>A701 tourist route/ footpath                                                                                                            |
| other features                              | <b>moderate/ major</b><br>north west ethylene pipeline/<br>national gas pipeline                                             | <b>moderate</b><br>crosses north west ethylene pipeline/ gas pipeline                                                        | <b>none</b>                                                                                                                                                |

| Route Section                               | 3a (7km)                                                                            | 3b (3km)                                                                            |
|---------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Landscape</b>                            |                                                                                     |                                                                                     |
| landform                                    | upland valley/ upland plateau                                                       | upland plateau                                                                      |
| landcover                                   | coniferous plantation/ rough grassland/moorland                                     | coniferous plantation/ rough grassland/moorland                                     |
| landuse                                     | commercial forestry/ rough grazing                                                  | commercial forestry/ rough grazing                                                  |
| designation                                 | AGLV/ RSA (west)                                                                    | AGLV/ Moffat Hills RSA (east)/ Devils Beef Tub                                      |
| character (SNH)                             | Southern Uplands Type with Scattered Woodland                                       | Southern Uplands Type with Scattered Woodland                                       |
| effect                                      | <b>moderate</b>                                                                     | <b>moderate</b>                                                                     |
| <b>Visual</b>                               |                                                                                     |                                                                                     |
| visibility                                  | partial/open                                                                        | partial/open                                                                        |
| receptor type                               | travellers                                                                          | travellers/ recreation                                                              |
| effect                                      | <b>moderate</b>                                                                     | <b>moderate/minor</b>                                                               |
| <b>Protected Areas &amp; Features</b>       |                                                                                     |                                                                                     |
| nature conservation (designated areas only) | <b>moderate</b><br>crossing of River Teed SAC/SSSI                                  | <b>moderate</b><br>crossing of River Teed SAC/SSSI                                  |
| cultural heritage                           | <b>moderate/ minor</b><br>(depends on design and assumes no direct impacts on SAMs) | <b>moderate/ minor</b><br>(depends on design and assumes no direct impacts on SAMs) |
| recreational features/ routes               | <b>moderate</b><br>A701 tourist route/ Tweeds Well                                  | <b>moderate</b><br>A701 tourist route/Devils Beef Tub/ viewpoint/ footpaths         |
| other features                              | <b>none</b>                                                                         | <b>none</b>                                                                         |

## Appendix C: Preliminary List of Potential Impacts

At this Consultation Document stage of the Project, based on the environmental baseline information collected and completed evaluation of route options, the potential significant effects of the proposed development on the environment have been identified as follows:

- Landscape and Visual

*Potential landscape and visual effect of proposed overhead line during construction and operation.*

- impacts on designated landscape areas (Regional Scenic Areas and Areas of Great Landscape Value)
- impacts on sensitive visual receptors (residential, recreational)

- Archaeology and Cultural Heritage

*Potential effect on known (or potential) archaeology during construction and operation*

- Ecology and Nature Conservation

*Potential effect during construction and operation include:*

- impacts on flora of local or national significance.
- impacts on watercourses and tributaries
- disturbance of fauna.
- loss of terrestrial habitat

- Recreation and Tourism

*Potential effect on known tourist/ recreation destinations and routes during construction and operation*

- Water Quality and Drainage

*Potential effect on watercourses during construction.*

- Infrastructure and Utilities

*Potential effect on existing infrastructure (North West Ethylene pipeline and National Gas pipeline) during construction.*

- Landuse and Property (in particular Forestry Commission)

*Potential effect on commercial forestry.*

Other potential effects that are considered at this stage to not have a significant effect and are considered unlikely to be of special interest are listed below: -

- Geology and Ground Conditions
- Access and Transport
- Noise and Vibration
- Electro Magnetic Field (EMF) Appraisal

Consultation on this document, collection of further environmental baseline information for the preparation of the Scoping Report and the environmental impact assessment process itself may identify other effects, which will be included in the Environmental Statement.

---





## Appendix D: Preliminary List of Desk and Field Studies

The table below provides a preliminary list of proposed desk and field studies to be carried out to support matters to be addressed throughout the environmental process. A number of these tasks have been undertaken for the identification of the Preferred Route and preparation of the Consultation Document.

| Topic                         | Method                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Landscape and Visual          | <ul style="list-style-type: none"> <li>- Desk survey review of baseline information covering key features of the physical environment, planning allocation, natural and cultural designations (.</li> <li>- Combination of desk and site survey to prepare a description of the landscape and features.</li> <li>- Combination of desk and site survey to review existing visibility and visual amenity.</li> </ul>                                                                                                                                                                                                                                                                                                         |
| Archaeology and Heritage      | <ul style="list-style-type: none"> <li>- Obtain baseline cultural heritage data in GIS format on a defined search area from Historic Scotland and local authorities.</li> <li>- Desk-based assessment enhancement (maps, aerial photos, documentary sources)</li> <li>- Reconnaissance field survey of narrow corridor along route and visual assessment to/from external receptors (setting).</li> </ul>                                                                                                                                                                                                                                                                                                                   |
| Nature Conservation & Ecology | <ul style="list-style-type: none"> <li>- Desk study to review available baseline ecological and nature conservation information for the local area, including review of local development plans, existing ecological survey information and the Local Biodiversity Action Plan.</li> <li>- Site survey to undertake an extended Phase 1 habitat survey of proposed overhead route corridor.</li> <li>- A combination of desk study, consultations and site survey to: <ul style="list-style-type: none"> <li>• assess value of habitats and species in the locality;</li> <li>• identify need and timing for any specialist studies;</li> <li>• identify where mitigation measures may be necessary.</li> </ul> </li> </ul> |
| Recreation and Tourism        | <ul style="list-style-type: none"> <li>- Desk study review of OS Map/ Collected Information from Consultees.</li> <li>- Specialist Recreation/ Tourism survey and assessment undertaken if required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Infrastructure and Utilities  | <ul style="list-style-type: none"> <li>- Desk study review of OS Maps/ Collected Information from Consultees.</li> <li>- Specialist survey and assessment undertaken if required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Water Quality and Drainage    | <ul style="list-style-type: none"> <li>- Desk study review of OS Maps/ Collected Information from Consultees.</li> <li>- Specialist Hydrological survey and assessment undertaken if required.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Geology and Ground Conditions | <ul style="list-style-type: none"> <li>- Desk study review of Geological &amp; OS Maps/ Collected Information from Consultees/ SP Topographical Survey</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Landuse and Property          | <ul style="list-style-type: none"> <li>- Desk study review of OS Maps/ Local Plan/ Joint Structure Plan/ Local Employment data held by Council/ Scottish Executive.</li> <li>- Desk study review of planting and felling coup plans held by the Forestry Commission.</li> <li>- SP specialist input (land agent) as required to complete survey and assessment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
| Access and Transport          | <ul style="list-style-type: none"> <li>- Desk study review/ Collected information from Dumfries &amp; Galloway/ Borders/ SLC Roads &amp; Transport Department and Scottish Executive.</li> <li>- SP information provided as required to complete survey and assessment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Noise and Vibration           | <ul style="list-style-type: none"> <li>- Desk study review/ Collected information from Consultees.</li> <li>- SP specialist input as required to complete survey and assessment.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| EMF                           | <p>The Environmental Statement will contain a report on any changes to electro magnetic fields resulting from the works as prepared by SP Energy Networks</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



## References

- ASH Consulting Group (1998) The Borders Landscape Assessment. Scottish Natural Heritage Review No 112.
- Council of the European Communities (1985) Directive on the assessment of the effects of certain public and private projects on the environment, 85/337/ EEC.
- Commission of the European Communities (1997) Directive 97/11EC Amending Directive 85/337/EEC.
- Commission of the European Communities (2001) Guidance on EIA- Scoping. Luxembourg: Office for Official Publications of the European Communities. ISBN 92-894-1335-2
- Department of the Environment (1995). Preparation of Environmental Statements for Planning Projects that require Environmental Statements. HMSO, London.
- Dumfries and Galloway Council (1999) Dumfries and Galloway Structure Plan. Adopted 1999.
- Dumfries and Galloway Council (2006) Annandale and Eskdale Local Plan. Adopted 2006
- East Dunbartonshire Council, East Renfrewshire Council, Glasgow City Council, Inverclyde Council, North Lanarkshire Council, Renfrewshire Council, South Lanarkshire Council, West Dunbartonshire Council (2005) Glasgow and Clyde Valley 2025 Consultative Draft Structure Plan.
- Forestry Commission (1994) Forest Landscape Design Guidelines, 2<sup>nd</sup> Edition (Wetherby, Forestry Commission)
- Holford, W (1959) Power production and transmission in the countryside: preserving amenities, paper presented to Royal Society of Arts, 25 November, London.
- Landscape Institute with the Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Assessment, Second Edition, Spon Press, London.
- Land Use Consultants (LUC) (1998) Dumfries and Galloway Landscape Assessment SNH Review No 94. Publications Section, Battleby, UK ISBN 1350-3111.
- Landuse Consultants in association with Glasgow University Archaeological Research Division (1999) Glasgow and Clyde Valley Landscape Assessment. SNH Review Series. SNH. Perth.
- Marshall, R & Baxter, R (2002) Policy and Practice: Strategic Routeing and Environmental Impact Assessment for Overhead Electrical Transmission Lines. Journal of Environmental Planning and Management, 45(5), 747-764, 2002.
- National Grid Company (1992) Guidelines for the Routeing of New High Voltage Overhead Transmission Lines (Coventry, National Grid Company plc)
- Scottish Borders Council (2002) Scottish Borders Structure Plan. Adopted 2002.
- Scottish Borders Council (2005) Scottish Borders Local Plan. Finalised December 2005.
- Scottish Executive (2004) National Planning Framework for Scotland.
- SHETL (2004) Electricity Transmission Development Proposals in Scotland: The Scottish Hydro- Electric Transmission Ltd (SHETL) Approach. High Voltage Steel Lattice Tower Transmission Lines. The Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC1992 and SHETL 2003 Notes.
- South Lanarkshire Council (2005) South Lanarkshire Local Plan. Consultative Draft. October 2005.
- Terence O'Rourke ( 2006) Earlshaugh Windfarm: Environmental Impact Assessment Scoping Report.

### Relevant Legislation

- The Electricity Act 1989 (as amended by the Utilities Act 2000)  
Electricity Works (Environmental Impact Assessment)(Scotland) Regulations 2000

### Maps

- OS Moffat First Edition Sheet- 1 inch to 1mile- 1858  
OS Explorer Sheet- 1: 25,000  
OS Landranger Sheet- 1: 50,000
-



## Glossary of Terms

### Significance of Effects

The different thresholds of significance of impact are determined through an evaluation of the *scale* or *magnitude of effect* and the environmental *sensitivity of the location* or *receptor*.

The relative significance of effects is assessed using the following terms:

**Major** - a fundamental change to a sensitive environment

**Moderate** - a material but non-fundamental change to the environment;

**Minor** - a detectable but non-material change to the environment.

**None** - no detectable change to the environment.

### Environmental Assessment

The following are Environmental Assessment terms as defined by EC (2001) Guidance on EIA- Scoping. Office for Official Publications of the European Communities and other Guidance<sup>9</sup>

| Term                            | Explanation                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Effect / Impact</i>          | Any change in the physical, natural or cultural environment brought about by a development project. Effect and Impact are used interchangeably                                                                                                                                                                                                                                   |
| <i>Environmental Assessment</i> | A process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the relevant decision making body before a decision is given on whether the development should go ahead.                                                                                                       |
| <i>Environmental Statement</i>  | A document which sets out the developers assessment of the likely effects of the project on the environment and which is submitted in conjunction with the application for consent for the development.                                                                                                                                                                          |
| <i>Mitigation</i>               | Any process activity or thing designed to avoid, reduce or remedy adverse environmental impacts likely to be caused by a development project                                                                                                                                                                                                                                     |
| <i>Potential Impacts</i>        | Impacts which could occur in the absence of appropriate design modifications or preventative measures                                                                                                                                                                                                                                                                            |
| <i>Predicted impacts</i>        | Those impacts which are predicted as a consequence of the development although the nature and severity of effect will be conditioned by the scope for mitigation,                                                                                                                                                                                                                |
| <i>Scoping</i>                  | An initial stage in determining the nature and potential scale of the environmental impacts arising from the proposed development and assessing what further studies are required to establish their significance. The process of scoping identifies the content and extent of the Environmental Information to be submitted to the Competent Authority under the EIA procedure. |

### Landscape and Visual Assessment

The following are Landscape and Visual Assessment terms as defined by the Landscape Institute with the Institute of Environmental Management and Assessment (2002) Guidelines for Landscape and Visual Assessment.

| Term                                 | Explanation                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Landscape Capacity</i>            | The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of change being proposed.                                                                                               |
| <i>Landscape Character</i>           | The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soil, vegetation, landuse and human settlement. It creates the particular sense of place of different areas of the landscape. |
| <i>Landscape Effects</i>             | Change in the elements, characteristics, character and qualities of the landscape as a result of development. These effects can be positive or negative.                                                                                                                                                                                   |
| <i>Landscape Condition (quality)</i> | Is based on judgements about the physical state of the landscape, and about its intactness, from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements, which make up the character in any one place.                                                                   |
| <i>Landscape Sensitivity</i>         | The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.                                                                                                                                                                                                    |
| <i>Landscape Value</i>               | The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, because of its quality, special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues.       |

<sup>9</sup> DoE 1995

|                        |                                                                                                                                                                                                                                                                                                 |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Magnitude</i>       | A combination of the scale, extent and duration of an effect.                                                                                                                                                                                                                                   |
| <i>Receptor</i>        | Physical landscape resource, special interest or viewer group that will experience an effect.                                                                                                                                                                                                   |
| <i>Visual Amenity</i>  | The value of a particular area or view in terms of what is seen.                                                                                                                                                                                                                                |
| <i>Visual Effect</i>   | Change in the appearance of the landscape as a result of development and the resulting effect on visual amenity (i.e. change in character of available views and change in visual amenity). This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction) |
| <i>Visual Envelope</i> | Extent of potential visibility to or from a specific area or feature.                                                                                                                                                                                                                           |

## Transmission Equipment

The following terms used in relation to transmission equipment are generally defined as follows: -

| <b>Term</b>                 | <b>Explanation</b>                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Cable</i>                | Generally refers to an underground “ <i>cable</i> ” suitably insulated, used for transmitting electricity.                                                                                                                                                                                                                                                                            |
| <i>Conductor</i>            | Wire strung between pylons, used for transmitting electricity.                                                                                                                                                                                                                                                                                                                        |
| <i>Earthwire</i>            | Wire strung between the tops of pylons, used for lighting and system protection. May also be used to carry telecommunication signals                                                                                                                                                                                                                                                  |
| <i>Electricity lines</i>    | Either an overhead line or an underground cable used to transmit electricity.                                                                                                                                                                                                                                                                                                         |
| <i>Insulator</i>            | Used to attach the conductors to the pylons preventing electrical discharge to the steelwork. Usually made from porcelain glass units, joined together to form an insulator ring.                                                                                                                                                                                                     |
| <i>kV</i>                   | Kilovolt (one thousand volts)                                                                                                                                                                                                                                                                                                                                                         |
| <i>MW</i>                   | Megawatt (one million watts or one thousand kilowatts)                                                                                                                                                                                                                                                                                                                                |
| <i>Outage</i>               | The withdrawal from service of any part of the transmission system for a period of time in connection with repair, maintenance, or construction of the transmission system as a result of breakdown or failure.                                                                                                                                                                       |
| <i>Overhead Line</i>        | An electric line installed above ground usually supported by lattice steel towers or wooden poles                                                                                                                                                                                                                                                                                     |
| <i>SPEN</i>                 | Scottish Power Energy Networks. Develop and operate the transmission system on behalf of Scottish Power Transmission Ltd.                                                                                                                                                                                                                                                             |
| <i>SPT</i>                  | Scottish Power Transmission Ltd. Licence holder under the Electricity Act 1989, responsible for the transmission network from the English/ Scottish border to just north of Stirling.                                                                                                                                                                                                 |
| <i>Sealing end compound</i> | The compound area surrounding the terminal tower, where an overhead line converts to an underground cable.                                                                                                                                                                                                                                                                            |
| <i>Substations</i>          | Transforming or switching stations to control the voltage and direction of electricity. Transforming stations are used to increase the supply of electricity (to 275kV or 400kV) into the national grid system for transmission, and to reduce the voltage to lower levels (to 132kV) for distribution. Switching controls the direction of electricity and ensures fault protection. |
| <i>Wayleave</i>             | An agreement granted by the owner or occupier of land whereby transmission equipment is permitted to be installed on, over or under the land so owned or occupied in return for annual payments.                                                                                                                                                                                      |





**ScottishPower**  
**EnergyNetworks**

Earlshaugh Windfarm Grid Connection  
New Alderston House  
Dove Wynd  
Strathclyde Business Park  
Bellshill ML4 3FF