

# SP MANWEB

## Reinforcement to the North Shropshire Electricity Distribution Network



Document Reference: 6.2  
Environmental Statement Chapter 2  
Alternatives and Design Evolution

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November 2018



**SP MANWEB**

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Electricity Distribution Network**

**CHAPTER 2  
ALTERNATIVES AND DESIGN EVOLUTION**

**Environmental Statement**

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**The Planning Act 2008**

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009**

**Regulations 5(2)(a)**

**Reinforcement to the North Shropshire Electricity Distribution Network**

**Environmental Statement: Chapter 2 – Alternatives and Design Evolution**

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<b>ENVIRONMENTAL STATEMENT</b>		
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6.2	2	Alternatives and Design Evolution
6.3	3	Proposed Development
6.4	4	Approach and General Methodology
6.5	5	Planning Considerations
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Reference is also made to the following documents:

<b>DCO Document</b>	<b>Document</b>
5.1	Consultation Report
7.1	Planning Statement
7.5	The Strategic Options Report (May 2016)
7.6	Updated Strategic Options Report (November 2017)
7.7	Further Updated Strategic Options Report (November 2018)
7.8	Route Corridor Options Report (June 2016)
7.9	Line Route Report (June 2016)
7.10	Updated Line Route Report (November 2016)
7.11	Updated Line Route Report 2 (November 2017)

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## CHAPTER 2: ALTERNATIVES AND DESIGN EVOLUTION

### 2.1 INTRODUCTION

2.1.1 This chapter provides an outline of the main alternatives to the Proposed Development that have been considered by SP Manweb in developing the scheme prior to the application for an Order granting development consent. It provides an outline of the main reasons for the selection of the Proposed Development and explains how environmental and other factors have influenced the decisions taken in respect of the Proposed Development. During this process consideration has been given to the requirements of the EIA Regulations<sup>1</sup> and the relevant policy guidance contained in National Policy Statement (NPS) EN-1<sup>2</sup> and NPS EN-5<sup>3</sup>.

2.1.2 The EIA Regulations state at Schedule 4, Part 1 (18) that the ES needs to provide:

*'An outline of the main alternatives studied by the Applicant and an indication of the main reasons for the Applicant's choice, taking into account the environmental effects.'*

2.1.3 Under the EIA Regulations there is no requirement to assess all potential alternatives, only a requirement to provide a review of those main alternatives that have been considered and the reasons for the choice.

2.1.4 Diagram 2.1 (below) summarises the process that was followed in developing the scheme.

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<sup>1</sup> The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended),

<sup>2</sup> Department for Energy and Climate Change (July 2011), Overarching Energy National Policy Statement (EN-1)

<sup>3</sup> Department for Energy and Climate Change (July 2011), National Policy Statement for Electricity Energy Infrastructure (EN-5)

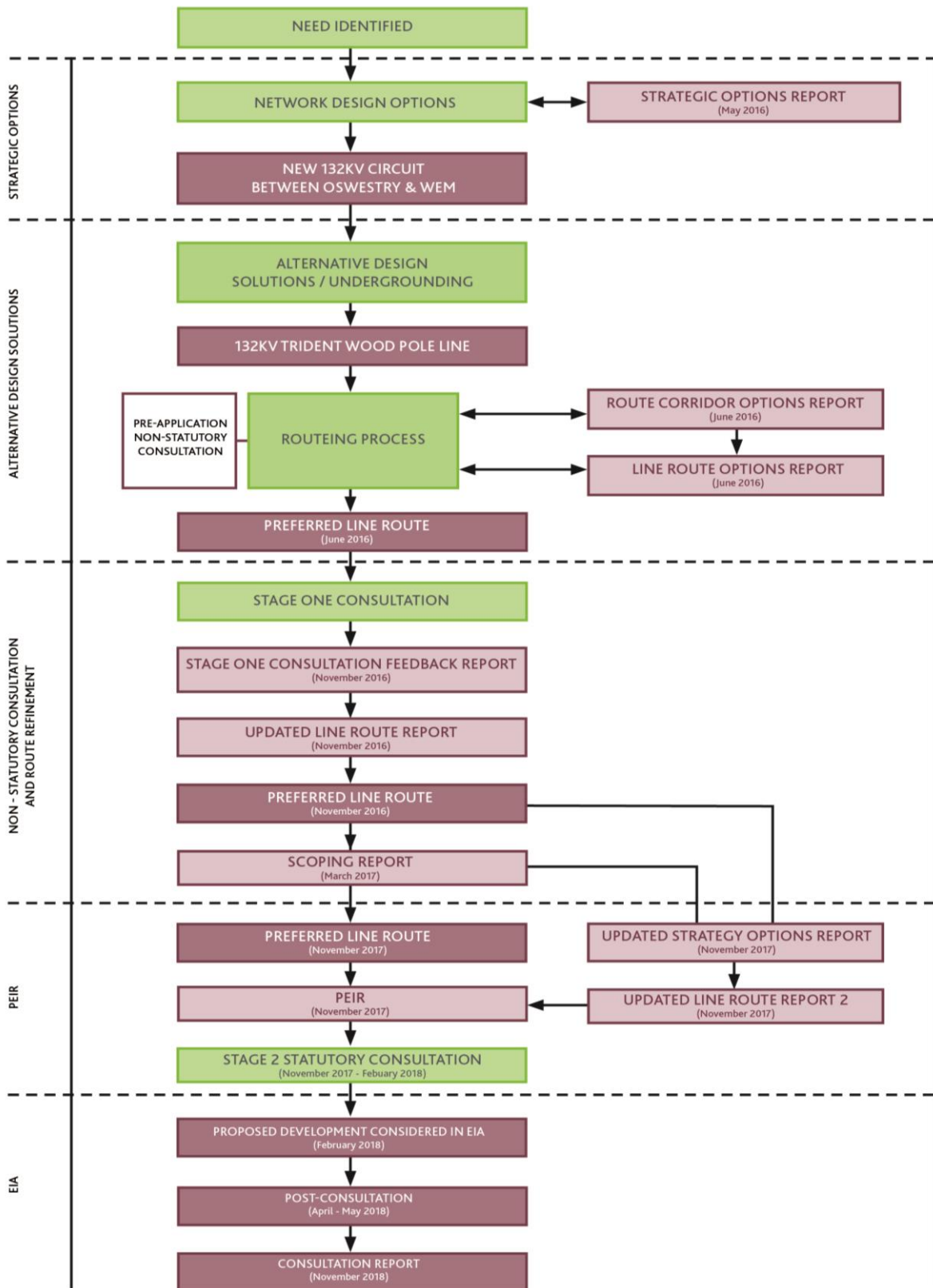


Diagram 2.1 – Design process for the Proposed Development

2.1.5 This chapter should be read in conjunction with:

- Figure 2.1: Amendments to the Proposed Line Route (**DCO Document 6.14**).

## 2.2 NETWORK DESIGN OPTIONS

2.2.1 The initial work carried out to identify the preferred design for reinforcing the network is presented in the Strategic Options Report (May 2016)<sup>4</sup> and the Updated Strategic Options Report (November 2017)<sup>5</sup> (**DCO Documents 7.5** and **7.6** respectively). A Further Updated Strategic Options Report (November 2018)<sup>6</sup> (**DCO Document 7.7**) has been produced to ensure the decisions made are still relevant. These documents consider the technical requirements of the network and outline the economic and high level environmental considerations. The various options considered are outlined below.

### Do Nothing Option

2.2.2 As explained in section 2.5 of the Further Updated Strategic Options Report (**DCO Document 7.7**), failure to reinforce the group would impede or prevent economic growth in the area and could risk thermal overloads and voltage issues as demand is expected to continue to increase. Furthermore, failure to reinforce the network would lead to a non-compliance of ER P2/6<sup>7</sup> and breach of Condition 24 of the distribution licence.

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<sup>4</sup> Strategic Options Report, SP Energy Networks (May 2016) (**DCO Document 7.5**)

<sup>5</sup> Updated Strategic Options Report, SP Energy Networks (November 2017) (**DCO Document 7.6**)

<sup>6</sup> Further Updated Strategic Options Report, SP Energy Networks (November 2018) (**DCO Document 7.7**)

<sup>7</sup> Conditions of the Distribution Licence are such that SP Manweb has a responsibility placed upon it to plan and develop the distribution system in accordance with a standard not less than that set out in Engineering Recommendation P2/6 (ER P2/6). ER P2/6 is considered to be the minimum level of security standard which sets out the expected levels of security required for distribution networks.

2.2.3 Further detail on the consequences of not reinforcing the network are detailed in section 2.5 of the Strategic Options Report (**DCO Document 7.5**).

#### Options Other than a New 132kV Network

2.2.4 SP Manweb explains in section 5.6 of the Strategic Options Report (**DCO Document 7.5**) that consideration was given to various technical options, starting with whether the network could be upgraded by installing equipment designed to manage customer need requirements within existing substations. This option was discounted because, although it would have limited environmental impacts, SP Manweb did not consider it would meet anticipated future demands for power. It would not therefore comply with SP Manweb's licence conditions (Condition 24) in terms of 'security of supply' as explained in Chapter 1 'Introduction' (**DCO Document 6.1**) and would be contrary to SP Manweb's statutory obligations.

2.2.5 A further technical option would be to increase the rating of existing lower voltage 33kV circuits to provide additional supply (see section 5.9 of the Strategic Options Report (**DCO Document 7.5**)). This was similarly discounted on the grounds that, although likely to result in minimal environmental impacts, it would not deliver sufficient supply for the anticipated demand.

2.2.6 A third option would be to increase the number of 33kV circuits between the substations in Oswestry, Marchwiel, Whitchurch and Wem (see sections 5.7 and 5.8 in the Strategic Options Report (**DCO Document 7.5**)). This was discounted as it would require multiple new circuits, which would increase costs and also likely environmental impacts.

2.2.7 The option of taking a supply from the nearby 400kV circuit operated by National Grid plc was also considered (see section 5.12 of the Strategic Options Report (**DCO Document 7.5**)), but discounted due to the significant cost increases and likely significant environmental impacts, as a new 400kV/132kV transformer substation would be required in addition to a new 132kV overhead line.

### 132kV Options Considered

2.2.8 The Strategic Options Report (**DCO Document 7.5**) also explains that consideration was given to various options involving a new 132kV network. These included:

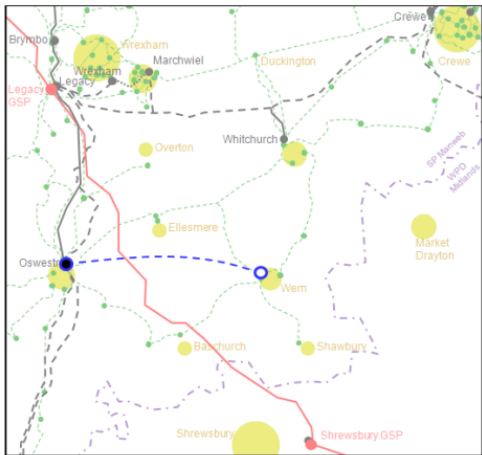
- Installing a new 132/33kV transformer at Whitchurch, a new 132kV circuit from Marchweil-Whitchurch and new 33kV circuit from Whitchurch-Wem (see section 5.10 in the Strategic Options Report (**DCO Document 7.5**));
- Installing a new 132/33kV transformer at Whitchurch, new 132kV circuit from Crewe-Whitchurch and new 33kV circuit from Whitchurch-Wem (see section 5.10 in the Strategic Options Report (**DCO Document 7.5**));
- Installing a new 132/33kV transformer at Wem and a new 132kV circuit from Whitchurch-Wem (see section 5.11 in the Strategic Options Report (**DCO Document 7.5**)); and
- Installing a new 132/33kV transformer at Wem and a new 132kV circuit from Marchweil-Wem (see section 5.11 in the Strategic Options Report (**DCO Document 7.5**));

2.2.9 These options were discounted due to the length of new electricity circuit required and the consequent costs and likely environmental impacts. A new circuit between Marchweil and Whitchurch would require a shorter length of new overhead line, but would have potentially resulted in significant environmental impacts from crossing or passing close to important nature conservation sites.

2.2.10 The conclusion of the options appraisal was therefore that the preferred design solution for upgrading the electricity supply in North Shropshire was to install a new 132kV circuit between Oswestry and Wem Substations. This was deemed to be acceptable in environmental terms and would also be the most cost effective and technically efficient option. The outcome from the

Strategic Options Report (**DCO Document 7.5**) showing the preferred design solution is illustrated below.

**5.11 Establish New 132/33kV Supply at Wem**

	<b>Option</b>	<b>New 132kV circuit Oswestry – Wem New 132/33kV transformer in Wem</b>	
	<b>Evaluation</b>	<b>Proposed</b>	<b>Preferred solution</b>
<p>The new c.22km overhead line will reinforce the existing 33kV distribution network by increasing the capacity available throughout North Shropshire.</p> <p>This option is to establish a new transformer in-feed at Wem. This minimises the electrical infrastructure required and therefore associated potential environmental effects. Although, there is still a need to avoid impacts on key national designations and minimise overall impact.</p>			

*Diagram 2.2 – Outcome of the (extracted from Strategic Options Report)*

2.2.11 This option complies with SP Manweb’s statutory requirements, Distribution Licence conditions and other DNO obligations.

**2.3 ALTERNATIVE 132KV DESIGN SOLUTIONS BETWEEN OSWESTRY AND WEM**

2.3.1 Having identified that the preferred connection solution would be a new 132kV reinforcement between Oswestry and Wem, the Strategic Options Report (May 2016) considered the main alternative design solutions for the new circuit. These were:

- Steel lattice tower (L7 design) approximately 26m high;
- Heavy duty wood pole (with underslung earth wire) approximately 15m high;
- Trident wood pole (no earth wire) approximately 12m high; and
- 132kV underground cable.



2.3.2 The images below show three different types of 132kV overhead line structure considered (the images show indicative heights, actual heights can vary depending on design requirements). Trident wood poles are a combination of single pole structures for straight runs and double wood pole structures where a change in direction is required.



Steel pylons – approx. 26m      Heavy duty double wood poles – approx. 15m      Single wood pole Trident – approx. 12m

*Diagram 2.3 – 132kV overhead line support structures*

2.3.3 These options are discussed in turn below.

**Choice of Overhead Line Support Structure**

2.3.4 Steel towers for 132kV overhead lines are used when a greater span length (up to x3 that of a wood pole) is required e.g. to cross features where there is a land level change or where ground clearances need to be higher. They can also be used to reduce impacts on agricultural practices.

2.3.5 Steel towers would therefore not be required within the landscape of the Proposed Development, SP Manweb therefore considered two wood pole designs. These were the heavy duty wood pole (HDWP) design and the Trident design. The HDWP is a larger double wood pole structure with heavier metalwork than the lighter Trident design. It is typically used where wind velocities and potential ice loading are higher and where there is a need

for integral earthing structure. In the case of this project, there was no need for an integral earthing structure and the predicted wind and ice loading are such that the smaller and lighter Trident design could be used. This design is already installed in North Shropshire, Mid Wales and Cheshire. In 2015 a 20km long 132kV Trident line was installed between Legacy (Wrexham) and Oswestry Substations. The line is well assimilated into the well-wooded rural landscape through which it passes.

- 2.3.6 Trident wood poles are lighter and shorter structures than HDWPs and provide greater flexibility to avoid potential environmental issues through careful routeing. The choice of Trident wood poles allows for greater flexibility and minimal environmental impacts whilst providing a suitable engineering solution for the required line and local geography.

### Undergrounding

- 2.3.7 Whilst a new circuit can be achieved by overhead line or underground cable, undergrounding the entire length of the route would be a factor of 2.2 – 2.8 times more expensive than an overhead line option as explained in the Updated Strategic Options Report (November 2017) (**DCO Document 7.6**).
- 2.3.8 SP Manweb considered the option of undergrounding in the context of policy in NPS EN-1 and NPS EN-5. The only reference to undergrounding in these documents is in paragraph 2.8 ‘Landscape and Visual’ of NPS EN-5.
- 2.3.9 Paragraph 2.8.2 of NPS EN-5 states that,

*‘The Government does not believe that the development of overhead lines is generally incompatible in principle with developers’ statutory duty under section 9 of the Electricity Act 1989 to have regard to amenity and to minimise impacts’.*

It further acknowledges that wood poles,

*‘can give rise to adverse landscape and visual impacts, dependent on their scale, siting, degree of screening and the nature of the landscape and local*

*environment through which they are routed’, but notes that ‘for the most part these impacts can be mitigated’.*

- 2.3.10 SP Manweb considers the Trident wood pole design facilitates compliance with its Section 9 duties in that it results in lower impacts on the environment and enables more sensitive routeing through the landscape.
- 2.3.11 Paragraph 2.8.8 of NPS EN-5 notes that where there are ‘serious concerns’ about the potential adverse landscape and visual impacts of a proposed overhead line, the decision-maker will have to balance these against other factors, including the need for the proposed infrastructure, the availability and costs of alternative routes, technical difficulties and likely costs of undergrounding, as well as the benefits and any impacts of undergrounding along any of the identified sections of the route.
- 2.3.12 NPS EN-5 does not provide a definition of ‘serious concerns’, but SP Manweb have previously interpreted this term to mean adverse significant landscape and visual effects that are ‘over and above’ that expected for this type of development. In the context of an overhead line this is taken to mean an effect which is considered to be significant as assessed in through the EIA process.
- 2.3.13 The reasoning for this is that whilst Government accepts that NSIPs, including electricity networks infrastructure projects, will inevitably give rise to some negative effects then, ‘serious concerns’ must be engaged at a greater level of harm that would inevitably occur on projects on the scale of an NSIP. It is for this reason that NPS EN-5 refers to the need to undertake a very specific exercise to consider options (including undergrounding) only where landscape and visual effects (including visual effects on cultural heritage sites) are particularly significant.
- 2.3.14 Based on the above, SP Manweb takes the following approach to consideration of undergrounding:
- Is there a particularly sensitive location along the route of a 132kV

overhead line, where the effects of the line in that locality would give rise to serious concerns; and

- If the answer is in the affirmative, then this is an exceptional circumstance where undergrounding the line would bring significant benefits which would *'clearly outweigh any extra economic, social and environmental impacts and the technical difficulties are surmountable'*. NPS EN-5 (paragraph 2.8.9).

2.3.15 The Proposed Development has been carefully designed to avoid any particularly environmentally sensitive locations and therefore minimise any impacts on these areas. SP Manweb has considered the need for undergrounding and further explanation is provided in the Planning Statement (**DCO Document 7.1**).

## 2.4 THE ROUTEING PROCESS

2.4.1 The process of line route selection comprised a series of technical and environmental reviews and assessments, together with stakeholder consultation, as illustrated in diagram 2.1 above. Considerable investigatory work has been undertaken to identify the location of communities, heritage assets and other sensitive features. SP Manweb also undertook extensive pre-application consultation with statutory stakeholders, the public and landowners. SP Manweb's consultation process is described in detail in the Consultation Report (**DCO Document 5.1**).

2.4.2 Following submission of the Scoping Report<sup>8</sup> in March 2017, the Preliminary Environmental Information Report (PEIR)<sup>9</sup> in November 2017, and responses to consultation feedback, SP Manweb continued to refine the project, culminating in the Proposed Development which is the subject of this ES and

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<sup>8</sup> <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020021/EN020021-000027-Scoping%20Report.pdf>

<sup>9</sup> [https://www.spenergynetworks.co.uk/userfiles/file/SPM\\_NS RP\\_PEIR.pdf](https://www.spenergynetworks.co.uk/userfiles/file/SPM_NS RP_PEIR.pdf)

the application for an Order granting development consent.

### Overview of Routeing Process

- 2.4.3 This section briefly explains how SP Manweb arrived at the Proposed Development from the initial identification of four broad route corridors.
- 2.4.4 Four Broad Route Corridor options, varying in width between 500m and 1km wide, were initially identified and given a colour code (Red, Blue, Orange and Purple). After consideration of the various environmental and technical constraints within each Broad Route Corridor, the Orange and Purple Broad Route Corridors were discounted and the Red and Blue Broad Route Corridors taken forward for further analysis. In order to assist the comparative evaluation of the two corridors, they were divided into broadly similar sections (e.g. Red 1 or R1, Blue 1 or B1 etc). Following further environmental and technical assessment a final broad route corridor was selected. As explained in the Route Corridor Options Report (June 2016)<sup>10</sup> (**DCO Document 7.8**) this included sections from both the Red and Blue Broad Route Corridors - R1, B2 and B3.
- 2.4.5 The next stage of the process was to then identify narrower (approximately 100m wide) line route options within the final Broad Route Corridor, which could be presented for project consultation. This work is explained in the Line Route Report (June 2016)<sup>11</sup> (**DCO Document 7.9**).
- 2.4.6 The narrower line route options were further considered and compared in greater detail than the broad route corridors, and resulted in the identification of a 100m wide Preferred Line Route. An updated version of this was presented in May 2017 when the Project Update 3 Newsletter was published. This was further refined into a narrower construction and operations corridor (generally 25m wide) and a Preferred Line Route, which was presented in the

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<sup>10</sup> Route Corridor Options Report, SP Energy Networks (June 2016)

<sup>11</sup> Line Route Report, SP Energy Networks (June 2016)

PEIR and the Stage Two Statutory Consultation in November 2017. A 2km consultation boundary centred on the Preferred Line Route was also presented at this stage. Following this consultation and further survey work a 25m wide corridor, for the overhead line was identified and is considered within this ES.

- 2.4.7 The routeing work undertaken is described in the following text and explained in more detail in the Route Corridor Options Report (**DCO Document 7.8**) and the Line Route Report (**DCO Document 7.9**).

#### Identification and Appraisal of Broad Route Corridors

- 2.4.8 The work carried out in relation to broad route corridor options is set out in the Route Corridor Options Report (**DCO Document 7.8**) which was prepared for SP Manweb by environmental consultants MWH.
- 2.4.9 Chapter 3 of Route Corridor Options Report (**DCO Document 7.8**) refers to how the routeing process applied the Holford Rules<sup>12</sup>, the broad principles formulated by the late Lord Holford for the routeing of overhead transmission lines. Whilst the Holford Rules relate specifically to high voltage electricity lines supported on lattice steel towers, many of the principles can also be

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<sup>12</sup> In 1959, Lord Holford, then advisor to the Central Electricity Generating Board (CEGB), developed a series of planning guidelines in relation to amenity issues, which have subsequently become known as the 'Holford Rules'. The National Grid Company (NGC) subsequently revised these rules in the 1990s, and although never formally published as official guidance, they are often referred to in planning publications such as, 'Planning Overhead Routes' (RJB Carruthers, 1987) and 'Visual Amenity Aspects of High Voltage Transmission' (GA Goult, 1989). The Holford Rules form the basis for the decision making process of siting overhead transmission lines, and minimising the potential landscape impact of such infrastructure. They are particularly helpful in identifying route options, as most landscape visual impact assessment guidelines relate to other forms of infrastructure. In contrast, the Holford Rules relate specifically to transmission lines, and although slightly amended in the 1990s, the core premise of each rule remains intact since originally proposed in 1959. Although they have been developed for transmission lines (steel towers), SP Energy Networks consider that the basic principles are applicable to the routeing of wood pole overhead lines.

used as guidance for routeing overhead lines supported on wood poles. The Holford Rules are regarded as industry standard and have been tested at public inquiries and at hearings under the Electricity Act 1989. Their use for routeing new overhead lines is advocated by NPS EN-5 (paragraph 2.8.5 – 2.8.7).

2.4.10 The basic premise of the Holford Rules is that the major effect of an overhead line is visual and that the degree of visual intrusion can be lessened by routeing the line to 'fit' the grain of the landscape. This can be done by using landform and trees to provide screening and/or background and by routeing a line at a distance from residential areas and roads. In addition, the Rules note that a well-routed line takes account of other environmental considerations by seeking to avoid the most sensitive and valued natural and man-made features.

2.4.11 The effect of the careful routing and on-going consultation in the design of the Proposed Development has been to avoid or reduce effects on the landscape, views and visual amenity by:

- Avoidance where practicable of designated and other 'sensitive' landscapes;
- Maximising separation from residential areas, including villages and other small settlements and occupied properties;
- Avoidance of areas with high tree cover to minimise requirements for tree felling and pruning;
- Avoidance of skyline locations, which tend to increase the visibility of poles;
- Using landform and trees to provide screening and back-dropping; and wherever possible routeing the line along the 'grain' of the landscape e.g. by following field boundaries and by locating poles close to hedgerows rather than in the middle of fields; and
- Utilising existing field accesses wherever possible, to minimise the

need for new site access tracks and removal of trees.

2.4.12 Rule 1 of the Holford Rules advises that the areas of ‘highest amenity value’ should be avoided wherever possible, without specifying what this term means. SP Manweb adopts the commonly accepted approach that this includes the following national and internationally regarded protected sites (‘primary constraints’). These include:

- Special Areas of Conservation, Special Protection Areas and Ramsar Sites;
- Sites of Special Scientific Interest and National Nature Reserve;
- National Parks and Areas of Outstanding Natural Beauty;
- World Heritage Sites, Scheduled Monuments, Listed Buildings (Grade I, II and II\*), Conservation Areas; and
- Registered Parks and Gardens.

2.4.13 The Route Corridor Options Report (**DCO Document 7.8**) also explains that, alongside the avoidance of areas of highest amenity value, technical and economic considerations were also taken into account. Technical considerations included ease of construction or ‘buildability’, altitude, slope angle, flood risk, and crossing of particular features such as bridges, railway lines, roads and existing overhead lines. The presence of Sleaf Airfield was also noted. Consideration was also given to land interests such as farming and mineral extraction. Economic considerations included the need to build the most direct line possible in order to minimise costs.

2.4.14 These environmental and technical constraints are shown in Figures 4.2 to 4.6 of the Route Corridor Options Report (**DCO Document 7.8**). Before identifying possible route corridors, SP Manweb also identified some local features that it noted might be considered of locally high value such as The Montgomery Canal. These are shown in Figure 6.1 of the Route Corridor Options Report (**DCO Document 7.8**).

2.4.15 Based on the above, four route corridors were identified on the basis of their



suitability for accommodating a Trident wood pole line. These were:

- Option 1: the 'Orange Route' (approximately 23.1km);
- Option 2: the 'Red Route' (approximately 20.8km);
- Option 3: the 'Blue Route' (approximately 21.8km); and
- Option 4: the 'Purple Route' (approximately 22.3km).

2.4.16 These are shown in Figure 4.10 of the Route Corridor Options Report (**DCO Document 7.8**).

2.4.17 The four broad route corridors were comparatively assessed against economic, technical and environmental constraints. Early in the assessment process it was noted that the Orange and Purple Broad Route Corridors were both longer and less direct than the other two options, and therefore economically less viable. They were also likely to present fewer opportunities for the identification of alternative line routes, than the other two options, to take forward as 100m wide line route options. This is because they were closer to the areas of highest environmental value and to the local sites that SP Manweb was seeking to avoid. For these reasons, SP Manweb concluded that there was no benefit in progressing these two options.

2.4.18 The next stage in the routeing process was to comparatively assess the Red and Blue Broad Route Corridors shown in Figure 5.1 of the Route Corridor Options Report (**DCO Document 7.8**). For this assessment each of these corridors was split into three sections (R1, R2, R3, and B1, B2, B3) and assessed against environmental and technical constraints section by section. The corridors were split into sections in order to assist the comparative assessment of them, the sections were all of broadly equal length. Greater information, including the assessment is presented in paragraphs 5.21 to 5.81 and concluded in paragraphs 5.82 to 5.91 of the Route Corridor Options Report (**DCO Document 7.8**). It was noted that in terms of minimising likely significant environmental effects, whilst Section 1 of the Red Route (R1) was preferred, the Blue Route was preferred overall.

2.4.19 Following the conclusions of the Route Corridor Options Report (**DCO**

**Document 7.8**), SP Manweb decided to take forward the first section of the Red Route (R1) and the first section of the Blue Route (B1) (as well as the remainder of the Blue Route) for further analysis, assessment and review in the next (identification of line route options) stage of the work.

### Identification and Appraisal of Line Route Options

2.4.20 In spring 2016, SP Manweb engaged Gillespies LLP, an experienced environmental consultancy in overhead line routeing and assessment, to undertake a check of the routeing work undertaken to date and then to lead on the identification and comparison of line route options (approximately 100m wide corridors) within the Red and Blue Broad Route Corridors. Gillespies was supported by a project team, including ecologists (Avian Ecology), heritage consultants (Network Archaeology), a consulting hydrologist (Bob Sargent); socio-economic professionals (Filkin & Co), agricultural land use consultants (Laurence Gould Partnership), and transport and traffic consultants (The Transportation Consultancy). The environmental team worked alongside overhead line designers, Line Design Technology (LDT)<sup>13</sup>.

2.4.21 The Line Route Report (June 2016)<sup>14</sup> (**DCO Document 7.9**) outlines the broad approach to identifying line route options. It describes how the Gillespies' team followed a similar approach to MWH by first reviewing the range of environmental constraint data in the Route Corridor Options Report (June 2016) (**DCO Document 7.8**) and then identifying any additional more detailed environmental and technical data ('secondary constraints') required to inform the line routeing stage. This included information on woodlands,

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<sup>13</sup> LDT, based in Wrexham, designed the similar Trident overhead line between Legacy and Wrexham, which was completed in 2015 and is now fully operational. This scheme was shortlisted in November 2016 for a national award in the utilities sector by Utilities Week for most efficient project delivery.

<sup>14</sup> Line Route Report, SP Energy Networks (June 2016)

long distance footpaths and other public rights of way, as well as updated information on local wildlife sites. The environmental criteria which were considered are listed in Table 2.1 of the Line Route Report (**DCO Document 7.9**).

2.4.22 One of the aims of the routeing process was to identify routes which would provide the best 'fit' within the landscape by:

- Following the grain of the landscape, running with valleys and alongside woodland edges and field boundaries;
- Using landform, woodland and trees as a backdrop or screening element;
- Minimising the number of crossings of linear features;
- Avoiding the creation of wirescapes;
- Avoiding residential areas wherever possible; and
- Following the most direct route wherever possible to limit the potential for environmental impacts.

2.4.23 The report goes on to explain that, from this exercise, a number of line route options, approximately 100m wide, were identified within the Red (R1) and Blue (B1, B2 and B3) Route Corridor. Following an initial appraisal, some of these line route options were discounted on technical and/ or environmental grounds as explained in paragraphs 3.14 – 3.17 of the Line Route Report (**DCO Document 7.9**). The remaining line route options were then comparatively appraised against the routeing criteria listed in Appendix A of the Line Route Report (**DCO Document 7.9**). These appraisal criteria have been used by SP Manweb and the assessment team on a number of similar projects. They reflect the nature of the proposal (Trident wood pole), desk and field based knowledge of the study area, and the team's previous routeing experience. They also continue to reflect the Holford Rules.

2.4.24 In identifying a route likely to give rise to the least environmental effects, the

routing process where possible sought to avoid all environmental constraints likely to result in significant effects. As the routing and appraisal process inevitably requires 'balancing' of environmental constraints within the local area, it was not possible to avoid all environmental constraints in their entirety.

- 2.4.25 The appraisal process highlighted a number of localised issues to be addressed during the subsequent EIA phase of the project. These are listed in paragraph 7.5 of the Line Route Report (**DCO Document 7.9**) and include issues such as potential effects on birds, loss of trees and woodland and effects on views from residential properties.
- 2.4.26 In parallel to this work, there was input from LDT and SP Manweb's land agents who had begun initial discussions with landowners and produced some preliminary designs. The work streams were then combined and a Preferred Line Route (June 2016) identified together with a number of options. This included a section of underground cable running from Oswestry Substation under the A5(T). These are shown in Figures 3.5 and 6.1 of the Line Route Report (**DCO Document 7.9**). The Preferred Line Route (June 2016) was then taken forward to non-statutory consultation.
- 2.4.27 In terms of the broad route corridors, this review led to the first section of the Blue Route (B1) being discounted in favour of a refined section of the Red Route (R1) running slightly further south than R1 (referred to as Option 1A) south of Whittington and a new line route option slightly closer to the village of Cockshutt. The Preferred Line Route (June 2016) is shown on Figure 6.1: Preferred Line route of the Line Route Report (June 2016) (**DCO Document 7.9**).

### Stage One Consultation

- 2.4.28 SP Manweb recognised that the Preferred Line Route (June 2016) and associated options would benefit from wider consultation to both seek peoples' views on the likely environmental effects and to help avoid or minimise these wherever possible.

- 2.4.29 As explained further in Chapter 4 ‘Approach and General Methodology’ (**DCO Document 6.4**), a consultation zone was therefore drawn up, based broadly on a 2km distance from the outer edge of the Red and Blue Route Corridors.
- 2.4.30 The Preferred Line Route (June 2016) was published in the Project Update 1 Newsletter<sup>15</sup> which was sent to approximately 3,800 local homes and business addresses during the summer of 2016. Publication of this newsletter was the start of the non-statutory Stage One Consultation which ran from June to September 2016 (further information is presented in the Consultation Report (**DCO Document 5.1**)).
- 2.4.31 In addition to the Preferred Line Route (June 2016), the Stage One Consultation also presented the line route options that had been considered and discounted. The consultation also requested feedback on the likely environmental effects, as noted in the Feedback Questionnaire (a copy of the questionnaire is included in the Consultation Report (**DCO Document 5.1**)).

#### **Work Undertaken Following the Stage One Consultation**

##### Publication of Feedback to Stage One Consultation (November 2016)

- 2.4.32 In November 2016 SP Manweb published the following documents setting out its response to the Stage One Consultation undertaken between June to September 2016:
- Stage One Consultation Feedback Report;
  - Project Update 2 Newsletter; and
  - Updated Line Route Report (**DCO Document 7.10**).
- 2.4.33 The process for considering consultation comments is explained in the Stage One Consultation Feedback Report, which is Appendix 4.1 to the Consultation Report (**DCO Document 5.1**). The Feedback Report also lists the responses

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<sup>15</sup> See the Consultation Report (**DCO Document 5.1**)

to the Stage One Consultation and refers to where changes to the Proposed Development should be considered in order to reflect comments received.

2.4.34 Responses to the Stage One Consultation included comments from the following organisations:

- Shropshire Council and nine out of the ten local parish councils potentially affected;
- Natural England, Environment Agency, Shropshire Wildlife Trust, the Woodland Trust, and the RSPB;
- Historic England;
- Severn Trent Water; and
- The Canal and River Trust.

2.4.35 In addition to comments from statutory bodies, all comments from local people, and landowners were considered.

2.4.36 The feedback and ongoing assessment work undertaken by SP Manweb resulted in an updated route for the proposed line, which was referred to as the Proposed Line Route (November 2016). This was shown as a fold out plan in the Project Update 2 Newsletter (November 2016) (Appendix 4.2 to the Consultation Report (**DCO Document 5.1**)).

2.4.37 As explained in the Updated Line Route Report (November 2016) (**DCO Document 7.10**), as a result of the feedback received, a more southerly route was adopted further from the village of Cockshutt where concerns about proximity to the line had been raised by local people. This new route which is referred to as the Proposed Line Route (November 2016) was considered to have no greater impacts on any single property in the area than the Preferred Line Route (June 2016).

2.4.38 In response to some residents' concerns in Noneley, the proposed route of the line was directed further to the south to reduce likely visual impacts on peoples' views and on the setting of Noneley Hall.

2.4.39 Near Lower Hordley, a more direct northerly route was proposed which avoided impacts on agricultural operations further south.

2.4.40 Following the publication of the Proposed Line Route (November 2016), SP Manweb continued to receive comments from stakeholders and landowners. This resulted in some minor amendments to the route both in terms of its alignment and in terms of small areas being excluded from the 100m wide corridor because they contained environmental features such as ponds or tree groups.

2.4.41 In addition to these minor changes, two sections of the Proposed Line Route were re-appraised. As a result, within each of these sections, two further options were identified, see Figure 2.1 (**DCO Document 6.14**). These were at Lower Hordley and Noneley:

- Lower Hordley – as a result of the likely effect on agricultural operations, two options were presented in the Scoping Report. These were Lower Hordley South (the Preferred Line Route (June 2016)) and Lower Hordley (a route further to the north, which was broadly similar to the Proposed Line Route shown in the Updated Line Route Report (November 2016) (**DCO Document 7.10**).
- Noneley – Section 4 of the Proposed Line Route (November 2016) was also subject to further detailed environmental assessment in terms of likely landscape, visual, historic environment and ecological effects. This was in response to SP Manweb reconsidering the Proposed Line Route (November 2016) in this area following feedback from Shropshire Council and the local community. Additional work was undertaken and detailed discussions held with Shropshire Council's heritage, ecology and landscape representatives. As a result two alternative options were presented in the Scoping Report. These were identified as Noneley South and Noneley North. Noneley South followed the Preferred Line Route (June 2016) south of Noneley, whilst Noneley North broadly follows the route of an existing 33kV overhead

line, to the north of the village.

2.4.42 Both of these options and the minor amendments to the Proposed Line Route are shown in Figure 1.1 of the Scoping Report<sup>16</sup> which was submitted to the Planning Inspectorate (PINS) in March 2017.

Publication of Project Update 3 Newsletter (May 2017)

2.4.43 In May 2017 SP Manweb published the Project Update 3 Newsletter (Appendix 4.5 to the Consultation Report (**DCO Document 5.1**)) explaining the latest position on the Proposed Line Route and particularly the two options at Hordley and Noneley, which had been introduced in the Scoping Report. The Newsletter also introduced a new option in the area around the Woodhouse Estate, which arose from ongoing discussions with local people including landowners. All options were considered within the environmental survey work.

2.4.44 The fold out plan included in the newsletter referred to these as 'Route Options' set within a 100m wide route corridor for Lower Hordley and Noneley and as a 'New Route Option', again within a 100m wide corridor, for Woodhouse.

2.4.45 Following publication of the Project Update 3 Newsletter (May 2017), SP Manweb continued throughout the summer of 2017 to undertake further environmental work including environmental surveys and assessments of the likely landscape and visual impacts, and impacts on ecology and historic assets. It also continued discussions with local people and landowners in relation to the three options.

2.4.46 SP Manweb met with local residents and landowners from the Noneley area in mid-May 2017 and then again with landowners affected more by the northerly route option in early July 2017. SP Manweb also attended a local

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<sup>16</sup> <https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020021/EN020021-000027-Scoping%20Report.pdf>



Loppington Parish Council meeting on the Noneley option in mid-July 2017 where a number of local people and landowners were present. With respect to the proposals at Woodhouse, SP Manweb met with representatives of the Woodhouse Estate.

- 2.4.47 All responses received following those meetings were considered, as explained in the Updated Line Route Report 2 (November 2017) (**DCO Document 7.11**).
- 2.4.48 The result of the feedback and the further environmental assessment work culminated in a route which was referred to as the Preferred Line Route (November 2017). This is shown in the PEIR Figures 1.1 and 1.2 'Proposed Project Boundary'.

### **Stage Two Consultation**

#### Preliminary Environmental Information Report (PEIR) (November 2017)

- 2.4.49 In accordance with the Planning Act 2008 and the EIA Regs 2009 a PEIR was published by SP Manweb in November 2017 as part of the statutory consultation (referred to as the Stage Two Consultation). The PEIR provided an initial statement on environmental information and likely significant environmental effects. The PEIR gave consultees, including members of the public, an understanding of the key issues and enabled them to prepare well-informed responses to the consultation process.
- 2.4.50 The statutory Stage Two Consultation process ran from 23 November 2017 to 2 February 2018. During the process the public, prescribed bodies and people with an interest in the land (hereafter referred to as 'consultees') were invited to offer their thoughts and feedback on the Preferred Line Route (November 2017), assessed within the PEIR.

### **Work Undertaken Following the Stage Two Consultation**

- 2.4.51 In response to the Stage Two Consultation a number of amendments were made to the route that had been assessed within the PEIR. These amendments resulted in the Proposed Line Route (April 2018). The locations

of the amendments are as follows:

- Rednal Mill – minor amendments to the location of poles 50 to 52 near Rednal Mill and the River Perry to counter the anticipated significant effects on residential visual amenity, and also to poles 54 to 64 to allow sufficient clearance beneath the existing 400kV National Grid pylon connection at Lower Lees;
- Lower Hordley – re-location of the line northwards (a maximum of approximately 240m) between poles 69 and 81 away from the settlement at Lower Hordley and to minimise the number of poles located within large arable fields and towards field boundaries, thereby reducing likely impacts on farming activities;
- Wackley Lodge – south of Cockshutt, there was a minor realignment of the line of up to 60m further north, between poles 112 and 115, in order to relocate poles from a higher agricultural grade field to a lower agricultural grade field;
- Bentley Farm/The Shayes – re-alignment of the line west of Noneley between poles 138 and 150 including taking the overhead line further north and west away from the residential dwelling at The Shayes Farm and moving the route further south and east away from the residential dwelling at Bentley Farm; whilst respecting existing landscape features such as ponds, trees and hedgerows;
- River Roden – re-alignment of the line, moving it away from Commonwood Farm, by up to 75m, and avoiding the felling of a large mature oak tree and moving pole 164 away from the edge of the river bank, between poles 160 and 166.

2.4.52 In addition changes were made to proposed access routes and the temporary laydown areas in response to landowner requests and SP Manweb constructability assessments.

2.4.53 Further consultation relating to the above amendments was announced in

April 2018. This was targeted consultation to explain the amendments to the route and to invite people to provide their comments. The consultation was aimed at the following individuals:

- Persons who were either engaged in the project consultation previously
- Persons who (as far as SP Manweb were aware) had an interest in land affected by the Proposed Development that was previously consulted;
- Persons affected by the propose amendments to the route assessed in the PEIR; and
- Prescribed bodies that SP Manweb are required to consult.

2.4.54 As a result of this consultation no substantive changes have been made to the Proposed Development including the amendments referred to in paragraph 2.4.51.

## **2.5 SUMMARY**

2.5.1 This chapter explains how SP Manweb has taken steps over a period of more than two years to consider alternatives through:

- An initial broad route corridor stage;
- Narrower 100m wide line routes;
- The Preferred Line Route (November 2017) within a 25m wide corridor considered in the PEIR;
- The route of the Proposed Development considered within this ES.

2.5.2 Throughout the development of the route SP Manweb sought information on the likely environmental effects from a range of statutory and local stakeholders. It then ensured that each option was considered against the same environmental criteria

2.5.3 SP Manweb has continued to listen and take account of feedback from

statutory stakeholders, local people and landowners as the project has developed. Refinements to the route have been made culminating in the Proposed Development. Figure 2.1 'Amendments to Proposed Line Route' (**DCO Document 6.14**), illustrates the changes made.

- 2.5.4 A description of the Proposed Development is presented in Chapter 3 'The Proposed Development' (**DCO Document 6.3**).