Electricity Act 1989 (Sections 36, 37, 62(3) & Schedule 8) Town and Country Planning Act 1990 (Section 90) and the Electricity Generating Stations and Overhead Lines (Inquiries Procedure)(England and Wales) Rules 2007

Application by SP Manweb PLC, dated 2 December 2009 for consent under Section 37 of the Electricity Act 1989 to install and keep installed a 132kV overhead electric line connection from the proposed Llandinam Wind Farm to Welshpool Substation (the "Application")

Proof of Evidence

Of

Eric Leavy

On

Company Policy

SPM/COMPANY/POE/LEAVY/002A

1. QUALIFICATION AND EXPERIENCE

1.1 I graduated with a BSc in Electrical Engineering from the University of Strathclyde in 1975. I am a member of the Institution of Engineering and Technology and I have been a Chartered Engineer (C Eng.) since 1988.

1.2 Since April 2012 I have been Head of Design for ScottishPower Energy Networks ("**SPEN**"). SPEN is the part of ScottishPower which carries out the tasks associated with owning and operating the electrical infrastructure of ScottishPower Transmission Ltd ("**SPT**"), ScottishPower Distribution Ltd ("**SPD**"), and SP Manweb Plc ("**SP Manweb**").

1.3 As Head of Design, I am responsible for leading a team of professional engineers who oversee the preparation of investment projects. This team ensures that the electrical connectivity, equipment layout, and technical specifications are appropriate to meet the needs identified for the electrical networks for which SPT, SPD and SP Manweb are the licence holders and to do so in a cost effective manner. I also ensure that the decisions made within SP Manweb as to the most appropriate connection solution are balanced and take all relevant matters into account. I then present these final proposals internally and secure the necessary funding for these projects.

1.4 I have worked in the electricity supply industry since 1973 and in that time I have held numerous positions as an engineer responsible for construction, operation and maintenance activities on electrical network equipment at all voltages from 230 volts up to 400kV. I have been an engineering manager with ScottishPower since 1994 in a variety of both operational and strategic management roles. More recently, between 2005 and 2007 I was the infrastructure Investment Delivery Manager responsible for construction projects totalling £120 million per annum. Between 2007 and 2010 I was Operations Manager (Scotland) responsible for the 24/7 network management, central control room and customer service activities of the SPT and SPD businesses.

1.5 In 2010 I was assigned to support the cross business project team which developed the SPT bid for regulatory funding to 2021. This team secured the £3.6 billion funding required to provide the Transmission assets and services necessary to meet the needs of customers served by the SPT asset base.

1.6 In 2012 I appeared as the company witness for SP Manweb in the inquiry for a third 132kV circuit between Legacy and Oswestry. This application was granted in May 2013.

1.7 This proof of evidence, which I have prepared and provide for this inquiry is true and has been prepared and is given in accordance with the guidance of my professional institution. I confirm that the opinions expressed are true and professional opinions.

2. *S*COPE OF EVIDENCE

2.1 In my evidence I provide a summary of SP Manweb's business responsibilities and the drivers influencing its approach to investment. I describe how SP Manweb progresses the scheme design and development proposals for a connection, once the need for that connection has been established. I then apply this to the proposed single circuit 132kV overhead line from the Llandinam Repowering Wind Farm to Welshpool Substation (the "**Llandinam Scheme**").

2.2 In Section 3 I provide an introduction to SP Manweb.

2.3 In Section 4 I provide an overview of SP Manweb's legal and other duties as a Distribution Network Operator ("**DNO**").

2.4 In Section 5 I outline SP Manweb's approach to certain issues including undergrounding, mitigation and land rights.

2.5 In Section 6 I summarise the Llandinam Scheme.

2.6 In Section 7 I summarise SP Manweb's position regarding alternatives to the Llandinam Scheme.

2.7 In Section 8 I draw my conclusions.

3. INTRODUCTION TO SP MANWEB

3.1 SP Manweb has 1.5 million electricity customers served by its electrical distribution network within its geographic licence area, which covers Cheshire, Merseyside, Shropshire and North and Mid Wales. As a Distribution Network Operator ("**DNO**"), SP Manweb is required to provide services under the terms of its Distribution Licence. Further information on SP Manweb's licence duties is provided in the evidence of Dr Beddoes (SPM/NETWORK/POE/BEDDOES/001A).

3.2 SP Manweb's service standards, investment plans and funding are agreed by the Office of Gas and Electricity Markets (Ofgem), the UK gas and electricity industry regulator.

3.3 SP Manweb is a subsidiary of ScottishPower Energy Networks Holdings Ltd (SPEN) and is owned by Iberdrola SA, a multinational electric utility company based in Spain. SP Manweb is part of the Regulated Business area within the Iberdrola Group and operates at arms length from the Non Regulated Businesses where Electricity Generation and Retail activities are carried out. Within the UK there are strict business separation requirements which restrict the flow of information and staff between the licence businesses and other business areas to ensure compliance with competition laws.

3.4 SPEN is the operating business responsible for the Transmission and Distribution systems for the SPT, SPD and SP Manweb licensed areas. SP Manweb is a licence holder, responsible for its distribution system up to and including 132,000 Volts (i.e. 132kV) in the licence area - which includes Merseyside, Cheshire, Shropshire, Mid and North Wales.

3.5 When the electricity industry was privatised in 1990, the enabling legislation imposed statutory duties on the electricity transmission and distribution companies. I explain these duties in the next section of my evidence. In addition, licences were granted to the companies to carry on with the provision of the network services previously provided under

the nationalised industry regime. The conditions forming part of these licences are subject to change by agreement with Ofgem.

3.6 From time to time, currently on a five year cycle, SP Manweb and Ofgem enter into an agreement about how the network infrastructure is to be managed and developed, what standards of service are to be provided and how customers are to be charged. These arrangements are called price controls. The current price control (DPCR5) runs until 31 March 2015. In operating within the price control regime, all of the necessary costs of operating, maintaining and developing the network are effectively recovered from our customers. The regulator acts to ensure that only the necessary costs are recovered through the charging regime.

3.7 SP Manweb customers include parties who have an electrical connection with the company's distribution system, whether they are generating electricity or consuming it. SP Manweb's customers also include those parties who have asked for terms for such a connection, as well as any party who is affected by the company's apparatus and is seeking some action to have the apparatus modified or deviated. This might be in order to facilitate a property development, for example. Such parties include power generators and electricity consumers, as well as property developers, and they can be private individuals or businesses.

4. LEGAL AND OTHER DUTIES

Introduction

4.1 In this section, I describe the legal and other related duties that are relevant to SP Manweb's development of its distribution network. I also explain the approach that SP Manweb takes in formulating its proposals for extension and reinforcement of the distribution network in the context of those duties.

Statutory and licence duties

4.2 Section 9 of the Electricity Act 1989 (CD/COM/023) requires a distribution network operator, such as SP Manweb, to develop and maintain an efficient, coordinated and economical system of electricity distribution. This obligation is also reflected in SP Manweb's Distribution Licence, which is issued and regulated by Ofgem. The requirement was introduced when the electricity industry was privatised in 1990. As I have explained in section 3 of my evidence, the costs of developing infrastructure are ultimately met by electricity consumers and the duty to maintain an economical system of electricity distribution must be seen in that context.

4.3 Section 16 of the Electricity Act 1989 (CD/COM/023) requires SP Manweb, when it is requested to do so, to provide premises with a connection to its distribution system which will meet and maintain the connection capacity required. SP Manweb is entitled to recover only reasonable and necessary costs incurred in providing the connection. SP Manweb is also required under the terms of its Distribution Licence to operate its distribution system in accordance with the security of supply standards set out in Engineering Recommendation P2/6. This recommendation is designed to ensure that the supply of electricity to consumers is maintained within a set of nationally agreed standards during periods of maintenance and when faults occur on the network.

4.4 Section 38 and Schedule 9 of the 1989 Act (CD/COM/023) place obligations on SP Manweb when formulating proposals for lines, cables or other works when developing network assets. These obligations are that it:

"(a) shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geographical or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and

(b) shall do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or any such flora, fauna, features, sites, buildings or objects." (Electricity Act, 1989, Schedule 9 (1(1))."

4.5 SP Manweb has published a Schedule 9 statement setting out guidelines on how it will seek to ensure that its obligations under Schedule 9 are fulfilled (CD/SPM/LIC/01). These guidelines require SP Manweb to establish network assets only when there is an established need. In establishing network assets, SP Manweb will consider designated amenity areas and will seek to minimise the impact of its operations on the environment and designated amenity areas and on more general amenity and historic aspects of the landscape. It will take steps to mitigate any unavoidable impacts wherever possible and in the case of major impacts will consult relevant bodies and appropriate stakeholders and carry out environmental assessments as required by legislation. SP Manweb will ensure its staff and contractors are fully aware of environmental considerations and requirements through training and the dissemination of information and will implement audits to ensure compliance. SP Manweb has complied with its schedule 9 obligations and the guidance contained in SP Manweb's Schedule 9 statement in the development of the Llandinam Scheme. This is demonstrated in Mrs Gibson's evidence (SPM/LANDSCAPE/POE/GIBSON/006A).

Application of statutory and other duties

4.6 SP Manweb has an asset base of overhead and underground distribution lines, substations and other infrastructure that has been established over many years. These assets have been installed and extended from time to time in order to provide connections and security of supply to consumers. However, changes in the pattern of generation or demand for electricity can result in the need for further changes to ensure that the distribution network is developed and maintained in an efficient, coordinated and economic manner.

4.7 Where it is necessary to extend the distribution network, SP Manweb first considers whether its existing assets can be reconfigured economically to provide a solution (or part of a solution) to meet the identified need. Where new assets must be provided, or existing assets modified, an investment plan is prepared by SP Manweb, which is updated, as necessary. A range of strategic options is considered that might meet the identified need and these are assessed in light of SP Manweb's statutory and licence duties and the requirements of its customers.

4.8 A solution which can be delivered in an appropriate timescale and which best meets SP Manweb's obligations will be progressed. Customers will be offered a contract for the agreed connection solution subject to necessary consents. Where the solution gives rise to a requirement to reinforce or up-rate existing assets in addition to establishing assets only serving the new connection then an agreed cost apportionment methodology is applied. Thereby, the connection customer pays a proportion of the costs, the balance of costs being provided for from regulated income from the wider customer group via the price control mechanism referred to in section 3.6 above.

4.9 In formulating its proposals, SP Manweb must have regard to its section 9 duties to develop and maintain an efficient, coordinated and economic system of electricity distribution but must also have regard to its duties

under Schedule 9 in respect of the environment. SP Manweb therefore has to organise and arrange its planning, development and construction activities such that customers and other stakeholder needs are taken into consideration and balanced in an appropriate manner. In doing so, SP Manweb keeps in mind that customers have clear expectations on costs, timescales and on network performance and reliability. This latter aspect is regulated by Ofgem by agreeing incentives and penalties that can have a significant financial impact on SP Manweb's business.

4.10 It will be evident that a number of factors need to be taken into account by SP Manweb in formulating its proposals for connection to the distribution network. These include the identified customer requirements interpreted as the need that must be met, electrical design options and technical requirements of the electricity distribution system, the construction methods and technology to be employed, scheme costs of alternative options, the environmental effects of different options, the views of the public, consultees and planning authorities and other relevant community stakeholders will all influence the development work as it takes shape. The development of any proposed network extension is therefore an iterative process taking into account a number of competing drivers and interests. In considering the (sometimes) competing duties placed upon it, SP Manweb has learnt from considerable experience of developing its distribution network what comprises the optimum solution in any given circumstance.

4.11 Given the potential for conflicting drivers influencing its detailed decision making, it is SP Manweb's practice to engage in consultation and to secure opinion from relevant statutory consultees and other stakeholders. In order to facilitate this process, SP Manweb employs both internal staff and external consultants with specialist expertise in environmental and planning matters. By this means, the various environmental and other inputs considered relevant to any investment plan being developed are coordinated and balanced decisions are facilitated.

4.12 As Head of Design within SP Manweb I have accountability to ensure that in the development of proposals on behalf of SP Manweb, the correct balance has been achieved in weighing all of the considerations which must be taken into account. In doing so I rely on the input of skilled professionals with experience covering the range of expertise required.

4.13 In the development of the Llandinam Scheme, for network connectivity and electrical performance I rely on Dr Beddoes. For the engineering design and selection of the appropriate technical solution I rely on Mr Paalman. For the identification of all potential environmental impacts and environmental assessment of the alternatives I rely on specialist firms with experience in environmental planning matters. Gillespies LLP were appointed to lead this activity including the preparation of the environmental statement in 2009 (CD/SPM/ES/02) and the updated statements of 2010 (CD/SPM/ES/03) and 2013 (CD/SPM/ES/01). In this regard I have relied on Mrs Gibson for the assessment of visual and landscape impact, Clwyd-Powys Archaeological Trust and Mr Bonner for the assessment of cultural heritage impacts, Mr James for nature conservation and impacts on ecology, Mr Brooke for socio-economic impacts, Mr Davies for traffic and transport matters and Dr Swanson with regard to health. In determining the correct weighting to achieve the correct balance, I rely on the input of Miss Berry for guidance in interpreting planning policy.

Conclusions

4.14 SP Manweb's statutory and licence duties require the company to review its network, identify requirements and propose construction schemes which meet the needs of its customers whilst being economical and sympathetic to the environment. The regulatory environment, competition in connections and the funding mechanism provide incentives to SP Manweb to achieve the right balance between its various duties. The Llandinam Scheme has been decided within this framework.

5. SP MANWEB'S APPROACH TO CERTAIN ISSUES

Introduction

5.1 In this section I describe SP Manweb's general approach to line routeing, the use of undergrounding and the mitigation of the effects of its infrastructure projects. I also outline SP Manweb's general approach to securing land and access rights.

Line routeing

5.2 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" (CD/SPM/GUID/01). The Holford Rules form the basis of the process of decision making for the placement of overhead transmission lines and seek to minimise the potential landscape impact of such infrastructure. They are particularly helpful in a route optioneering process. They 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.

5.3 When a connection offer is accepted and it is appropriate to meet the need by constructing an overhead line, it is recognised by SP Manweb that the guidance on overhead line routeing principles set out in the Holford Rules (CD/SPM/GUID/01), (although originally developed for routeing steel tower lines) represents industry best practice for the routeing of 132kV wood pole overhead lines.

5.4 In some cases there may be engineering, safety-related and other environmental reasons why the application of the Holford Rules (CD/SPM/GUID/01) needs to be balanced against other constraints, including site specific circumstances or to facilitate practicable access for construction and maintenance. However, SP Manweb's practice is generally to follow these principles when routeing new 132kV lines. Further details of the Holford Rules (CD/SPM/GUID/01) within the

context of the Llandinam Scheme are provided in the evidence of Mrs Gibson (SPM/LANDSCAPE/POE/GIBSON/006A)

5.5 The Electricity Safety Quality and Continuity Regulations ("ESQCR") (CD/SPM/LEG/01) set out a range of requirements with which SP Manweb has to comply. There are requirements that seek to ensure that the distribution system is constructed operated and maintained in such a fashion as to avoid danger to people and property. There are requirements to ensure that the supply connection is made to operate within agreed system frequency and voltage variations and that customers are provided with an appropriate level of supply security. With regard to safety from overhead lines, a risk based approach is taken. SP Manweb has to assess and take account of the likely activities by people who are anticipated to be in the vicinity of overhead lines and to take reasonable steps to mitigate the risks to which people would be exposed. In this respect it is SP Manweb's practice, wherever feasible, to route lines so as to avoid hazards to people in recreational areas.

5.6 The Updated Environmental Statement 2013 (Updated ES) (CD/SPM/ES/01) at section 1.6 (Volume 1) outlines the approach taken by SP Manweb to identifying the route for any given proposed overhead line. It is an iterative process and is environmentally led. It takes account of the Holfold Rules (CD/SPM/GUID/01) and relevant regulations as set out above.

5.7 Chapter 3 (Volume 1) of the Updated ES (CD/SPM/ES/01) describes the process of design evolution. This process of design evolution flows directly from the needs case. A range of high level strategic options that can meet this needs case are considered by SP Manweb and its consultant team and the key constraints associated with these high level options are defined.

5.8 All these high level options are then environmentally assessed. Through a process of consultation, the scope required for this environmental

assessment of the key options is established. In addition to this consultation, SP Manweb as a matter of course on all its projects will provide information to local stakeholders and seek feedback at an early stage in the development of its proposals.

5.9 The high level options are then assessed for environmental sensitivity and likely significant impacts. Relevant expertise is engaged both to provide multi disciplined input to this high level environmental assessment and to ensure that the identified scope is delivered.

5.10 Following this high level environmental assessment, a preferred route is developed with a view to minimising the potential significant adverse impacts of that route. This exercise takes account of the various identified sensitivities arising out of the environmental assessment referred to above. It also seeks to find an appropriate balance that includes taking account of available mitigation against significant adverse effects.

5.11 Detailed design and a further full environmental impact assessment is then undertaken prior to formal consultation on our environmental impact assessment and application for consent under section 37 of the Electricity Act 1989.

5.12 Mrs Gibson in her evidence (SPM/LANDSCAPE/POE/GIBSON/ 006A), fully explains the process (based on the above general approach of SP Manweb to these matters) which was followed in identifying and assessing the various environmental impacts of the Llandinam Scheme. Mrs Gibson also details how these were taken account of in the development of the preferred overhead line route for the Llandinam Scheme.

Undergrounding

5.13 Objectors within their Statements of Case have sought to argue that certain sections of the Llandinam Scheme should be placed underground. I set out below the SPM approach to this topic which is

heavily influenced by compliance with statutory duties and licence obligations. Mr Paalman in his evidence (SPM/ENGINEERING/POE/PAALMAN/003A), discusses the engineering aspects including cost and performance comparison with overhead lines. Miss Berry in her evidence (SPM/PLANNING/POE/BERRY/011A), gives careful explanation of the planning policy guidance to which SPM must look when considering the need for undergrounding.

5.14 The National Policy Statement for Electricity Networks Infrastructure (EN-5) ("NPS EN-5") (CD/COM/003), which was designated in July 2011, contains guidance on the approach which should be taken in assessing the merits of an underground cable option as an alternative to an overhead line solution. As is fully explained in the evidence of Miss Berry (SPM/PLANNING/POE/BERRY/011A) the Llandinam Scheme has been recently reviewed against the criteria and tests contained within this national planning policy.

5.15 SP Manweb does not have a documented policy regarding undergrounding. It is a question of taking a balanced view, taking into account SP Manweb's statutory and licence duties, whether a line is put overhead or a cable is placed underground. SP Manweb will seek a solution whereby it can balance all of the required factors in an environmentally acceptable manner which will result in the minimum achievable overall scheme cost on behalf of its customers. Undergrounding will always be considered on its merits as a solution to practical obstacles. An example of this would be in order to gain entry to a substation (as is proposed within the Llandinam Scheme to enable the connection to Welshpool grid substation). This will be explained by Mr Paalman in his evidence (SPM/ENGINEERING/POE/PAALMAN/003A). Undergrounding may also occur where an area is congested with other infrastructure assets or where there are safety concerns, for example in connection with the use of land. These are additional reasons for considering

undergrounding which are outwith the scope of NPS EN-5 (CD/COM/003) but which SP Manweb will have regard to.

5.16 SP Manweb's approach therefore is that undergrounding (due to its high cost) should principally be reserved for situations where there are technical constraints or where land is of the highest landscape value and where the benefits clearly outweigh the additional costs of going underground. Technical constraints include densely built up areas, or areas with a number of existing overhead lines, where it may be difficult physically to route an additional overhead line. Such constraints are sometimes found when seeking to connect to electricity substations found in urban areas. Areas of the highest landscape value include National Parks and AONBs.

5.17 SP Manweb's assessment of the Llandinam Scheme against the policies on undergrounding set out in NPS EN-5 (CD/COM/003) is contained in the Appraisal of the Llandinam Scheme against National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (the "NPS EN-5 Paper") (Appendix 05a to the Updated ES (Volume 3a) (CD/SPM/ES/01)). Miss Berry in her proof of evidence (SPM/PLANNING/POE/BERRY/011A), explains the relevant policies and SP Manweb's application of that policy. Mrs Gibson in her evidence (SPM/ LANDSCAPE/POE/GIBSON/006A), sets out her assessment of whether there are any "serious concerns" as to the potential adverse landscape and visual effects of the Llandinam Scheme (which is the relevant test set out in NPS EN-5 (CD/COM/003)).

5.18 Mrs Gibson concludes that only in what is known as cumulative scenario 3 (relating to the Old Neuadd Bank to Cae-betin Wood section) will there be serious concerns arising. Cumulative scenario 3 considers the Llandinam Scheme together with the Llandinam Repowering Wind Farm, all the windfarms that are part of the conjoined inquiry and all other relevant development. Mrs Gibson concludes at paragraph 3.18.4 of the NPS EN-5 Paper (Appendix 05a to the Updated ES (Volume 3a) (CD/SPM/ES/01)) that these serious concerns would remain, even if the

Llandinam Scheme were undergrounded. This is because the likely significant landscape and visual effects of the other development would, when considered cumulatively, be major adverse effects. SP Manweb has interpreted the "serious concerns" test set out in NPS EN-5 (CD/COM/003) as being equivalent to a major adverse effect. This is explained by Miss Berry in her evidence (SPM/PLANNING/POE/BERRY/011A).

5.19 Having been informed by Mrs Gibson that the benefits of undergrounding the Llandinam Scheme would be limited (as serious concerns would remain even if it were undergrounded), SP Manweb has then considered the balance of the serious concerns against the need for the Llandinam Scheme and the cost of alternative sites, routes and methods of installation. It has considered whether the benefits of undergrounding will clearly outweigh any extra economic, social and environmental impacts of undergrounding.

5.20 SP Manweb's conclusion on need and alternatives is set out below in my evidence at Section 7. The cost of undergrounding will be explained by Mr Paalman in his evidence (SPM/ENGINEERING/POE/ PAALMAN/003A). SP Manweb considers that because the landscape is not a nationally designated landscape and therefore is not of the highest landscape value and further, as this section of the route is not close to residential areas, there would therefore be only moderate visual and amenity benefits achieved through undergrounding. The social and environmental effects, other than landscape and visual, of undergrounding along the roads network are not material. In addition, the "serious concerns" identified would remain, even if the Llandinam Scheme were undergrounded, due to the cumulative impacts of nearby windfarms on that same area. On the other hand the capital and lifetime costs of putting this section of the Llandinam Scheme underground would be an additional £13.6m. Weighing the benefit of reducing Landscape and Visual effects in this situation against this significant additional cost, SP Manweb has concluded that the NPS EN-5 test is not met and therefore National Planning Policy would not

require this section of the Llandinam Scheme to be undergrounded in order to make it acceptable.

Mitigation

5.21 SP Manweb will use the most appropriate means to minimise the environmental effects of overhead lines. As Mrs Gibson will explain in her evidence (SPM/LANDSCAPE/POE/GIBSON/006A), this is principally achieved through careful routeing of the line to avoid as far as reasonably possible impacts on cultural heritage, archaeology, ecology and to minimise landscape and visual impacts. In addition, consideration is also given to the type of pole support to be used and other aspects of the design of an overhead line.

5.22 As will also be described by Miss Berry in her evidence (SPM/PLANNING/POE/BERRY/011A), SP Manweb uses other measures to minimise the effects of its proposals on the environment, including planting, ecological protection measures and archaeological mitigation. Information identified through the process of consultation is used to develop an Environmental Management Plan which will ensure the environmental risks are controlled through a set of agreed measures during the construction stage. Also specific mitigation measures will be introduced to offset or compensate for any unavoidable impacts. Details of the Environmental Management Plan are given within chapter 12 of the Updated ES (CD/SPM/ES/01).

Land Rights

5.23 SP Manweb seeks to acquire the most appropriate land rights in the circumstances, having due regard to its overarching licence, regulatory and statutory obligations on a case by case basis.

5.24 It is SP Manweb’s preference to obtain a long term or permanent land right for all apparatus. SP Manweb acknowledges, however, the advice at paragraph 6.10 of the Department of Energy and Climate Change's

Guidance for Applicants and Landowners and/or Occupiers (June 2013) (CD/SPM/GUID/06) that

"*It is the department's considered view that a 15 year term represents an equitable period which provides a balance between offering the electricity company a degree of certainty for the installation of apparatus whilst still affording the landowner the opportunity of having the position reviewed in the light of subsequent changes in circumstances and the local environment."*

5.25 SP Manweb will always try to negotiate land rights voluntarily in the first instance. Where landowner consent cannot be secured by voluntary means SP Manweb will seek the relevant land rights from the Secretary of State. Even where it seeks such rights, however, SP Manweb will still try to negotiate voluntary agreements, including easements, where these can be secured economically with landowners.

5.26 SP Manweb is seeking to acquire the necessary land rights by agreement, but anticipates that if agreement has not been secured by early next year, SP Manweb will use its compulsory powers under the Electricity Act 1989 (CD/COM/023).

Conclusion

5.27 I have explained that SP Manweb will generally apply the Holford Rules (CD/SPM/GUID/01) in considering options for 132kV overhead line routeing. It will also ensure the requirements of ESQCR (CD/SPM/LEG/01) are met. SP Manweb will introduce underground sections where the test set out in NPS EN-5 (CD/COM/003) is met or (where this test is not met) it is in line with SP Manweb's approach to undergrounding. I have explained the conclusions of SP Manweb in relation to its assessment of the Llandinam Scheme against the policy on undergrounding that is set out in NPS EN-5.

5.28 SP Manweb considers that careful line routeing provides the most effective primary mitigation against the effects of an overhead line.

However where practicable, appropriate and with landowner consent, local measures such as screen and compensatory planting are offered to mitigate significant adverse environmental impacts.

5.29 The advice of ecological and archaeological experts is sought and implemented both to avoid damage through design and routeing and to specify control measures which minimise the risks to these aspects during the construction phase.

5.30 SP Manweb will seek appropriate land rights from the Secretary of State when reasonable efforts over a period of time to secure an acceptable form of consent by voluntary means have been unsuccessful.

6. THE LLANDINAM SCHEME

Introduction

6.1 In this section I provide a brief description of the Llandinam Scheme, the development of which (including line routeing) has been undertaken in the manner outlined above. I also introduce the engineering design and construction activities covered by other witnesses evidence.

Overview of the Llandinam Scheme

6.2 A 132kV connection is required between Welshpool and the Llandinam Repowering Wind Farm to accommodate the 90MVA connection for the Llandinam Repowering Wind Farm development, as explained in Dr Beddoes' evidence (SPM/NETWORK/POE/BEDDOES/001A).

6.3 The Llandinam Scheme is based on a 132kV single circuit overhead line HDWP design using 200mm2 AAAC Poplar conductor which have a maximum 124MVA summer rating. The route for the Llandinam Scheme is fully described in the Updated ES (CD/SPM/ES/01). It is outlined on the map shown in Figure 4.2 of the Updated ES (Volume 6) (CD/SPM/ES/01).

6.4 The route exits the proposed Llandinam Repowering Wind Farm Bryn Dadlau substation and heads in a broad east to north-easterly direction towards the A483. The route then crosses the main road to the south of the 'Devil's Elbow' road bend and runs towards the lower northern slopes below the Kerry Ridgeway. The route then follows an easterly direction until it drops down towards a group of properties near to Windy Hall and then along the B4368 as far as a property known as Cilthriew. From this point the route crosses over local farms away from Pentre and Saw Mill before crossing the A489 and heading towards a group of properties around Maenllwyd. Here the route crosses the road and runs eastwards and then north eastwards towards the railway bridge near Caerhowell. From the railway bridge the route runs eastwards to the south and east of the railway line for the next 4 to 5 km to the west

of Forden and then more north easterly towards Cilcewydd where the route would cross the local road from Welshpool to Leighton. The line route then follows field boundaries as it runs northwards into Welshpool substation. There are views of the setting including indicative placement of the line in the form of photomontages at key viewpoints along the route within Volumes 4a and b of the Updated ES (CD/SPM/ES/01). The Llandinam Scheme route and the potential environmental impacts will be described in detail in Mrs Gibson's evidence (landscape and visual effects) (SPM/LANDSCAPE/POE/GIBSON/006A), Mr Bonner's evidence (cultural heritage effects) (SPM/HERITAGE/POE/BONNER/010A) and Mr James' evidence (effects on ecology and woodlands) (SPM/ECOLOGY/POE/JAMES/005A).

6.5 The alignment of the preferred route has been refined following a robust review taking account of feedback from formal and informal consultation and representations made by stakeholders.

6.6 Stakeholders and objectors within their Statements of Case have challenged SP Manweb's selection of design specification for the 132kV overhead line. Views have been expressed that a "Trident" design would have less impact than the HDWP design proposed. The modern specification for what is sometimes known as "Trident" is ENA 43-50. This specification when used over higher ground and more exposed areas can require a greater number of double pole structures than would be the case in more sheltered locations.

6.7 Given the high ground location of the Llandinam Repowering Wind Farm, single "Trident" poles would not result in adequate strength to cope with anticipated weather conditions. As such, a significant number of double pole structures would need to be used. This is dealt with in more detail in the evidence of Mr Paalman (SPM/ENGINEERING/POE/PAALMAN/003A). He will also refer to visual materials that demonstrate the various "Trident" poles, as

objectors tend to focus on just the single pole option, rather than the full suite of Trident pole structures.

6.8 It is important to note that the HDWP specification has been developed specifically by SPM in recent years to cope with the onerous duty typical in the more exposed areas where renewable generation is being exploited. As such, Trident is not regarded as the most effective wood pole solution for the sort of terrain that the Llandinam Repowering Wind Farm is located in. In fact, this sort of terrain and the technical issues it provoked in terms of the Trident design, prompted SP Manweb to design the HDWP option. In any event, Mr Paalman (SPM/ENGINEERING/POE/PAALMAN/003A) will explain why the proposed overhead line requires the provision of an earth conductor and the public safety reasons why a Trident pole solution cannot be progressed by SP Manweb.

6.9 The approximately 34.3km connection proposed will predominantly be an overhead line utilising the Heavy Duty Wood Pole ("HDWP") design, except for a short 50 metre section of underground cable to facilitate termination at the Welshpool end of the circuit.

Programme For Delivery

6.10 SP Manweb is provisionally assuming that a decision on its Application will be made early-2015. If the decision is made to grant the Application then it is anticipated that any pre-construction conditions can be discharged by October 2015. Mr Livingston will discuss the construction programme in his evidence (SPM/CONSTRUCTION/POE/LIVINGSTON/004A).

6.11 Currently site work on the Llandinam Scheme is envisaged to begin in 2015. Prior to the construction of the 132kV overhead line, existing lower voltage overhead lines may require diversion or undergrounding and this would take approximately 9 months. There would be a degree of overlap with this activity and construction of the 132kV HDWP overhead line which would take approximately 14 months.

6.12 An indicative programme is set out in Volume 1 of the Updated ES (CD/SPM/ES/01) at Table 4.2. Taking the above into account the anticipated connection date for the developer is March 2017.

6.13 For a project of this scale, SP Manweb must engage suitably experienced construction contractors. However prior to tendering activity it is beneficial to have the necessary consents in place. This reduces the timeframe between tendering and construction and reduces the potential for cost overrun as a result of programme slippage.

6.14 Mr Livingston (SPM/CONSTRUCTION/POE/LIVINGSTON/004A) will also describe in his evidence the practical aspects of constructing and maintaining the proposed overhead line for the Llandinam Scheme including the access requirements for setting out, materials delivery and storage and the general approach and methodology employed on site during the construction period.

6.15 When constructed it is envisaged that the Llandinam Scheme would be capable of providing service for a period of at least 25 years and potentially well in excess of 40 years before requiring any major refurbishment. This is feature of the materials involved.

6.16 SP Manweb would envisage that the line would remain in situ only for as long as there was a need for it to be there. However in the longer term it is SP Manweb's experience that other customers and needs are likely to emerge over time and that the assets may be extended, modified or adapted for further service in line with licence obligations.

7. ALTERNATIVES

7.1 Miss Berry in her evidence (SPM/PLANNING/POE/BERRY/011A), outlines the planning policy context of guidance given in section 4.4 of the NPS EN-1 (CD/COM/001) for the identification of appropriate alternatives when developing infrastructure schemes.

7.2 The approach to scheme development and the evolution of the design is as described within Chapter 1 and chapter 3 of the Updated ES (CD/SPM/ES/01). This iterative approach requires the identification of the range of potential options at a strategic level. An explanation of how these potential options could (in terms of electrical performance) meet the identified need is explained in the evidence of Dr Beddoes (SPM/NETWORK/POE/BEDDOES/001A). SP Manweb has also given consideration to alternatives identified from consultation activities.

7.3 SP Manweb has set out its review of the needs case and alternatives to meeting that need in a paper dated October 2013. This is contained within the Review of Needs Case and Alternatives section 4.1 (Volume 5 of the Updated ES (CD/SPM/ES/01)) (the "Alternatives paper"). The Alternatives paper brings together a discussion of all the information relating to the strategic alternatives that have been considered over the years by SP Manweb.

7.4 Section 1 of the Alternatives paper provides an introduction to the document, summarises the statutory duties of SP Manweb and sets out the National Policy Statements and the EIA regulations requirements and guidance that relate to the consideration of alternatives. This section is explained in more detail in the evidence of Miss Berry (SPM/PLANNING/POE/BERRY/011A).

7.5 Section 2 outlines the needs case for the Llandinam Scheme and I deal with this in some detail below. Section 3 sets out the alternatives considered by SP Manweb for the Llandinam Scheme together with the assessment criteria and the assumptions used in evaluating these options. I deal with this section in more detail below. Section 4

describes the assessment of the Llandinam Scheme itself along with variations to that scheme (such as partial undergrounding). I deal with this below. Sections 5 and 6 describe the assessment of the other strategic alternatives to the Llandinam Scheme and again I deal with these below. Section 7 draws conclusions and explains that the Llandinam Scheme is the most appropriate option for delivering the stated connection need. I explain this in more detail below.

Need for the Connection and Design

7.6 At Section 2 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)), SP Manweb's statutory duties to provide a connection pursuant to section 16 of the Electricity Act 1989 (CD/COM/023) are explained. The document goes on to note the history of the connection application made by CeltPower Ltd and the subsequent offer provided by SP Manweb. This offer was amended in 2010 to be a connection for 90MVA. In essence, SP Manweb has a statutory duty to provide a 90MVA connection to the Llandinam Repowering Wind Farm that is being promoted by CeltPower Ltd. This connection has a target connection date of March 2017 and SP Manweb has to use reasonable endeavours to provide a connection by this date.

7.7 Dr Beddoes in his evidence (SPM/NETWORK/POE/BEDDOES/001A), deals with the network design in the Mid Wales area. He explains SP Manweb's conclusion that the connection point to the existing network has to be from Welshpool substation.

7.8 Mr Paalman in his evidence (SPM/ENGINEERING/POE/PAALMAN/003A), explains the reasons why SP Manweb has chosen to select a wood pole design for the connection. He goes on to explain why the wood pole design chosen is what is known as the heavy duty wood pole, rather than the ENA 43-50 design (sometimes known as Trident). Essentially it is for reasons of public safety.

Alternatives Considered and Assessed

7.9 As explained in Section 3 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)), "Alternative 1" is a reference to the Llandinam Scheme for which consent under section 37 of the Electricity Act 1989 has been applied for. This term is used as it reflects that referred to in the Environmental Statement of 2009 (CD/SPM/ES/02). As part of the review that is captured in the Alternatives paper, SP Manweb has considered route corridor variations to Alternative 1 as well as options for partially undergrounding the Llandinam Scheme.

7.10 The other alternative options which could theoretically be technically viable which have been considered are:-

7.10.1 Alternative 2: A connection to the existing Oswestry to Newtown circuit including the rebuilding and uprating which would be required of the majority of the existing circuit from Newtown to Oswestry, a total of 58km of overhead line construction.

7.10.2 Alternative 3: An underground cable option for the entire proposed connection into Welshpool Grid Substation, a total of 40km buried along local roads.

7.10.3 Alternative 4: The incorporation of a connection from Llandinam Repowering Wind Farm into the proposed mid Wales collector Hub system at Cefn Coch.

7.11 Other options for connection which have been suggested have been considered and discounted by SP Manweb because in SP Manweb's view they would not fully meet the need identified which is to serve the contracted position. These are however discussed (and SP Manweb's view justified) in the evidence of Dr Beddoes (SPM/NETWORK/POE/BEDDOES/001A).

7.12 The alternatives which are outlined above are assessed against four different sets of criteria which are often interactive:-

7.12.1 Environmental: The wider environmental impacts and implications of the proposed physical assets in their specific setting along the identified corridors are considered. Particularly, impacts on landscape; views and visual amenity; ecology; historic environment and flood risk are considered;

7.12.2 Technical: The electrical network designs to provide a connection with an acceptable level of performance are set out. The connection has to be made to work properly. Also the physical options in terms of technology, materials and construction standards have to be employed in a manner to reasonably ensure the safety of persons and property and to provide a reliable asset which will have an acceptable service performance. SP Manweb has to consider the effective use of its existing infrastructure as well as entirely new connection options;

7.12.3 Cost: The cost to provide, maintain and operate the connection must be such that the scheme would be economic in the context of the commercial constraints which must be satisfied if the project is to proceed;

7.12.4 Future capacity: the extent to which an alternative might make further capacity available needs to be considered.

7.13 Section 3 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)) also explains the assumptions that SP Manweb has used. For example, it has assumed that the contracted generation to be considered is as at April 2013.

Alternative 1

7.14 Section 4 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)) first sets out the assessment of the Llandinam Scheme against the criteria referred to above. Mrs Gibson in her evidence (SPM/LANDSCAPE/POE/GIBSON/006A) will explain the

performance of the Llandinam Scheme against the environmental criteria. Dr Beddoes in his evidence (SPM/NETWORK/POE/BEDDOES/001A), will summarise the technical performance of the Llandinam Scheme. Dr Beddoes explains that this connection would have the potential to allow an additional 10 MVA of Generation to be accommodated within the network in the future before overloads would become problematic. Mr Paalman in his evidence (SPM/ENGINEERING/POE/PAALMAN/003A), will explain the costs of the Llandinam Scheme.

7.15 Mrs Gibson in her evidence (SPM/LANDSCAPE/POE/GIBSON/006A), explains the consideration that was given in 2008/9 to Routes C, D and E. Route E became the Llandinam Scheme and Mrs Gibson addresses the reasons for this and the balancing of various environmental factors that led to this decision.

7.16 In summary, the alternative routeing corridors C and D have costs which are similar to or slightly less than the Llandinam Scheme. However the environmental impacts of these other routes are considered to be more adverse than the Llandinam Scheme, particularly with regard to residential amenity. On weighing up these effects SPM has to consider the impact on local residents of the line passing close to their homes as having more weight in this instance than the impacts on the wider landscape which result when the line is routed to be further away. As such, SP Manweb has concluded that these options are, on balance, less preferable and the increase in cost from following a longer route is justified

7.17 Section 4.4 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)) explains the decisions taken by SP Manweb not to underground parts of the Llandinam Scheme, other than the 50m cable section into the Welshpool substation. I explain in paragraphs 5.13 to 5.20 above, the analysis that was undertaken against the policy on undergrounding that is set out in NPS EN-5 (CD/COM/003). Similarly, the Alternatives paper refers to the NPS EN-5 paper and its

conclusions. I address these conclusions at paragraph 5.20 of my evidence above.

7.18 In short, there is only one section of the Llandinam Scheme which would meet the "serious concerns" test set out in NPS EN-5 (CD/COM/003) and that is in respect of cumulative landscape and visual effects only. It is assessed that the benefit achieved by undergrounding in this case would be minimal, due to the serious concerns caused by other proposed development remaining even if the Llandinam Scheme is placed underground. The costs of undergrounding this part of the Llandinam Scheme would be approximately half of the overall scheme cost. When balanced against the benefits of undergrounding, this leads to a conclusion in SP Manweb's view, that the benefits from undergrounding would not clearly outweigh the extra economic, social and environmental impacts of undergrounding. When balancing the serious concern mentioned against the need for the Llandinam Scheme and the availability and cost of undergrounding, SP Manweb concludes that the alternative of a partial underground section in the proposed connection is not justifiable.

Alternative 2

7.19 Alternative 2 is an adaptation of the option whereby a connection would be provided to the existing Oswestry/ Newtown circuit. The needs case as set out in the evidence of Dr Beddoes (SPM/NETWORK/POE/BEDDOES/001A), demonstrates that a connection elsewhere onto another part of the existing network is not an available or suitable alternative. This is because the capacity for generation connection on that existing circuit is already fully utilised by the existing connection for generation at Carno. The 33kV and 132kV networks into and beyond Newtown would be subject to thermal overload as a consequence of the level of additional generation connecting into the existing network.

7.20 However to further evaluate the option of a distribution system connection at Newtown, SP Manweb has identified a variation to this alternative which could theoretically be a technically viable connection. This would require a substantial reinforcement to the circuit between Newtown and Oswestry. This could only be practically achieved by constructing a new circuit of the required capacity on a different route to the existing lines over a total distance of 58km (12km from the Llandinam Repowering Wind Farm to Newtown and 46km of new circuit between Newtown and Oswestry). SP Manweb would then dismantle the existing Newtown to Oswestry Circuit.

7.21 This alternative would, given the distance, be much more expensive than the proposed Llandinam Scheme and also result in much more adverse environmental impacts (as explained in paragraph 5.1.3 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)). The new HDWP line required to Oswestry would not provide any spare capacity for future generation. It is concluded therefore that this alternative would not be a suitable or economic alternative means of connection to the existing distribution system.

Alternative 3

7.22 Alternative 3 comprises a wholly underground cable connection to Welshpool. This would be in theory a technically viable option it would serve the contracted generation and as with Alternative 1 could in principle accommodate a further 10MVA of future generation onto the local system. However as discussed in the evidence of Mr Paalman (SPM/ENGINEERING/POE/PAALMAN/003A), the cost would be more than three times that of an overhead line. As such SP Manweb would be failing in its duty to provide an economic and cost effective solution for customers if it implemented this option. In respect of a wholly undergrounded scheme to Welshpool substation, the assessment is set out in the NPS EN-5 paper (Appendix 05a to the Updated ES (Volume 3a) (CD/SPM/ES/01)) referred to above. The conclusions in this paper on partial undergrounding of the Llandinam Scheme (set out above at

paragraph 7.18 apply also to the whole route being underground. In short, for the reasons referred to above and as set out in paragraph 5.2.4 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)), the alternative of a wholly underground connection is not justifiable.

Alternative 4

7.23 Alternative 4 comprises a connection from the Llandinam Repowering Wind Farm via the future proposed Mid Wales Hub. This is a scheme that is being partially promoted by SP Manweb under the Planning Act 2008 process for the 132kV connection elements of the scheme (the SP Mid Wales Connections Project). Leading on from the new Hub would be a 400kV network solution that is being promoted by National Grid. This alternative therefore seeks to provide a connection within this composite solution for several other proposed major wind generation developments. Theoretically, this is a technically viable alternative.

7.24 SP Manweb is of the view that there are significant uncertainties inherent within the delivery through the planning process of the SP Mid Wales Connections Project, when compared to the fact that there is already capacity at the existing substation at Welshpool to deliver a connection from the Llandinam Repowering Wind Farm. In addition, there is a longer programme for the SP Mid Wales Connections Project both as a result of these uncertainties and as a result of the dependency on the National Grid project to deliver the Hub itself and the 400kV connection from that Hub. These factors, together with the factors set out in paragraph 6.2.4 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01)), mean that including the connection for the Llandinam Repowering Wind Farm within the SP Mid Wales Connections Project is not believed by SP Manweb to be an available or suitable alternative.

7.25 However SP Manweb has acknowledged statutory consultees' interest in seeing the Llandinam Repowering Wind Farm connected into the SP

Mid Wales Connections Project. SP Manweb has therefore evaluated a combined Llandinam Scheme and connection from the SSA C area to the proposed Cefn Coch Hub. SP Manweb has then compared this option to the status quo of the Llandinam Scheme and the currently envisaged proposals for the SP Mid Wales Connections Project.

7.26 It is important to note that the SP Mid Wales Connections Project cannot accommodate the connection to the Llandinam Repowering Wind Farm without additional transmission infrastructure being required. This would either be an upgrade to a steel tower pylon in the southern leg of the project or by adding an additional 132 kV HDWP overhead line into that southern leg in addition to the line that is currently proposed.

7.27 In order to accommodate the connection from the Llandinam Repowering Wind Farm, additional switchgear and transformer capacity would also be necessary at the Cefn Coch Hub.

7.28 In order to allow for a consideration of this alternative, the Alternative paper in section 6.1 (Volume 5 of the Updated ES (CD/SPM/ES/01)) explains the SP Mid Wales Connections Project in more detail. It also sets out:

7.28.1 The high level environmental considerations for two route corridors that were considered for the southern leg of the SP Mid Wales Connections Project. These corridors are known as CC1 (the preferred route corridor) and CC2 (a corridor that was discounted following community consultation and environmental assessment work);

7.28.2 The technical considerations, in particular the low system losses inherent in the status quo as well as the lack of a need for additional transmission infrastructure;

7.28.3 The combined cost of the status quo option (£48 -52m).

7.28.4 The status quo option would provide for future capacity via the Llandinam Scheme component that is an additional 10MVA.

7.29 SP Manweb, in considering how a connection from the Llandinam Repowering Wind Farm could be delivered via the SP Mid Wales Connections Project has established a number of sub-alternatives.

7.30 These are as follows:

7.30.1 **Alternative 4a**: this would comprise two 132kV HDWP overhead lines, one in CC1 as currently proposed and a second line in CC2;

7.30.2 **Alternative 4b**: this would comprise two 132kV HDWP overhead lines, both being in CC1;

7.30.3 **Alternative 4c**: this would comprise two 132kV HDWP overhead lines, both being in CC2;

7.30.4 **Alternative 4d**: a steel tower pylon (double circuit) in CC1;

7.30.5 **Alternative 4e**: a steel tower pylon (double circuit) in CC2;

7.30.6 **Alternative 4f**: is an alternative that would not meet SP Manweb's statutory duties but is an option that we have been asked to consider by statutory consultees. Essentially, it would involve the planning process restricting generation capacity such that the Llandinam Scheme did not progress and instead connection would solely be provided by a 132kV HDWP overhead line in CC1. This would be able to carry 176MVA of generation capacity.

7.30.7 **Alternative 4g**: is as for alternative 4f but with the line being located in corridor CC2.

7.31 I set out below SP Manweb's assessment of each of these sub-alternatives, considering the environmental, technical, cost and future capacity criteria that are referred to above at paragraph 7.12.

7.31.1 **Alternative 4a**: there are fewer significant effects on landscape and the historic environment when compared to the status quo option. There are more likely significant effects on ecology and views. On balance, in environmental terms this alternative is slightly better than the status quo. In technical terms this alternative would provide a technically viable solution. However, it would require additional transmission equipment and would incur additional system losses when compared with the status quo. It also does not make use of existing capacity at Welshpool. Its estimated cost would be £6m above the status quo. It provides an additional 34MVA of future capacity. In SP Manweb's view, the technical constraints and increased cost outweigh the slightly fewer environmental effects. As such the status quo is the preferred option.

7.31.2 **Alternative 4b**: Routeing two overhead lines through one corridor would increase the level of effects and introduce additional landscape, visual and cultural heritage effects along the route. There will be a number of constraint points along the route. This alternative will perform less well in environmental terms than the status quo. In technical terms this alternative would provide a technically viable solution. However, it would require additional transmission equipment and would incur additional system losses when compared with the status quo. It also does not make use of existing capacity at Welshpool. Its estimated cost would be £8.2m above the status quo. It provides an additional 34MVA of future capacity. In SP Manweb's view, due to the technical constraints, costs and additional environmental effects, the status quo is the preferred option.

7.31.3 **Alternative 4c**: Routeing two overhead lines through one corridor would increase the level of effects and introduce additional landscape, visual and cultural heritage effects along the route. There will be a number of constraint points along the

route. This alternative will perform less well in environmental terms than the status quo, as well as performing less well than alternative 4b in the CC1 corridor. In technical terms this alternative would provide a technically viable solution. However, it would require additional transmission equipment and would incur additional system losses when compared with the status quo. It also does not make use of existing capacity at Welshpool. Its estimated cost would be £3.9m above the status quo. It provides an additional 34MVA of future capacity. In SP Manweb's view, due to the technical constraints, costs and additional environmental effects, the status quo is the preferred option.

7.31.4 **Alternative 4d**: Impacts of the larger scale and more visually dominant steel tower technology would be greater than the status quo. This is particularly the case for landscape and visual and cultural heritage effects, There are a number of constraint points that would make introducing a steel tower problematic. As such, this option performs less well in environmental terms compared to the status quo. In technical terms this alternative would provide a technically viable solution. However, it would require additional transmission equipment and would incur additional system losses when compared with the status quo. It also does not make use of existing capacity at Welshpool. Its estimated cost would be £6.7m above the status quo. It provides an additional 155MVA of future capacity. In SP Manweb's view, due to the technical constraints, costs and additional environmental effects, the status quo is the preferred option

7.31.5 **Alternative 4e**: Impacts of the larger scale and more visually dominant steel tower technology would be greater than the status quo. This is particularly the case for landscape, visual and cultural heritage effects, There are a number of constraint points that would make introducing a steel tower problematic.

As such, this option performs less well in environmental terms compared to the status quo, as well as performing less well than option 4d. In technical terms this alternative would provide a technically viable solution. However, it would require additional transmission equipment and would incur additional system losses when compared with the status quo. It also does not make use of existing capacity at Welshpool. Its estimated cost would be £0.7m above the status quo. It provides an additional 155MVA of future capacity. In SP Manweb's view, due to the technical constraints, marginally additional costs and additional environmental effects, the status quo is the preferred option

7.31.6 **Alternative 4f**: As this option involves just using the currently proposed HDWP overhead line in the southern leg of the SP Mid Wales Connections Project (i.e. CC1), the environmental effects of this option are as for CC1 (explained in paragraph 6.1.9 of the Alternatives paper (Volume 5 of the Updated ES (CD/SPM/ES/01))). This solution in technical terms would be systems compliant. It would cost between £21-24m less than the status quo as this is the cost of the Llandinam Scheme. Theoretically, this option would be compliant with SP Manweb's statutory duties, if generation capacity was limited to 176MVA.

7.31.7 However, at a policy level, SP Manweb does not believe that this alternative would be in compliance with the urgent need for renewable energy that is set out in the National Policy Statements (CD/COM/001 and CD/COM/003). This is due to the programme delay for the Llandinam Repowering Wind Farm that would be inherent in relying on a connection via the SP Mid Wales Connections Project. Amending the SP Mid Wales Connections Project to include the Llandinam Scheme into the CC1 corridor (the planned route does not currently go to Llandinam Repowering Wind Farm) would mean a connection date of approximately 2021. Even assuming that the Llandinam

Repowering Wind Farm could be incorporated into the existing proposed CC1 connection without needing to redesign, re-consult etc on that southern leg of the project, then the earliest an operational connection would be provided is 2019.

7.31.8 In addition to this significant delay (in the context of a windfarm application that was made in 2008), there is planning risk attached to the SP Mid Wales Connections Project that is not present in the Llandinam Scheme - due to the Llandinam Scheme connecting into the existing substation at Welshpool and being a connection for only one windfarm.

7.31.9 There is also some degree of commercial risk present in the SP Mid Wales Connections Project due to it being dependant on a number of developers working together and sharing project costs between them, with the consequential effect of changes in one scheme adversely impacting on the costs of the others. The current developers involved in the SP Mid Wales Connections Project are aware of and managing this risk. CeltPower Ltd does not currently face this risk on the Llandinam Scheme.

7.31.10 As such, SP Manweb believes that this alternative would not be compliant with national planning policy due to the delay inherent in delivering a connection through this option. Delivering this alternative would also introduce significant planning and commercial risk to the Llandinam Repowering Wind Farm developer that it will not have needed to consider in its commercial considerations to date.

7.31.11 **Alternative 4g**: This option is identical to alternative 4f above save with the difference that the CC2 corridor performs less well than CC1 and so is not preferred to alternative 4f.

7.31.12 SP Manweb's view is that, for the reasons given above in relation to alternative 4f, alternative 4g would not be compliant

with national planning policy due to the delay inherent in delivering a connection through this option. Delivering this alternative would also introduce significant planning and commercial risk to the Llandinam Repowering Wind Farm developer that it will not have needed to consider in its commercial considerations to date.

7.32 In conclusion, in relation to alternative 4a, the status quo performs better in cost terms but alternative 4a is marginally better in environmental terms. For alternatives 4b to e, the status quo performs better both in cost terms and environmentally.

7.33 It is important to note that in relation to all alternative 4a to 4e, the status quo in technical and project timing terms:

7.33.1 Minimises the requirement for additional transmission infrastructure;

7.33.2 Reduces the system losses inherent in the alternatives considered;

7.33.3 Makes use of existing capacity within the current distribution network; and

7.33.4 Allows for delivery of a timely connection to the Llandinam Repowering Wind Farm that is in accordance with the emphasis placed on delivery of renewable energy schemes that is set out in the NPS suite of documents.

7.34 Alternatives 4f and 4g would constrain the potential generation connections to 176MVA and would have a corresponding saving in network connection costs from the status quo as the Llandinam Scheme would not be delivered. Also the environmental impacts arising from it would be avoided. However when compared with alternatives 4f and 4g, the Llandinam Scheme in technical and project timing terms:

7.34.1 Reduces the system losses inherent in the alternatives considers; and

7.34.2 Allows for delivery of a timely connection to the Llandinam Repowering Wind Farm that is in accordance with the emphasis placed on delivery of renewable energy schemes that is set out in the NPS suite of documents

7.35 As such, the status quo is and remains the preferred outcome from all of the alternatives 1-4 discussed within this proof.

Future Capacity

7.36 Powys County Council has asked SPM to consider the potential to fully exploit the Welshpool – Oswestry route to enable the generation from the SSA C area supported by PCC to be transmitted by the proposed overhead line. In response, SP Manweb has reviewed the electrical network's capacity to absorb maximum practicable levels of additional generation by studying several additional scenarios. Dr Beddoes sets out the discussion of this in his evidence (SPM/NETWORK/POE/BEDDOES/001A). It has been determined that a range of measures (including rebuilding the over 30km circuit from Welshpool to Oswestry) could increase the possible transfer by around 70MVA over the Llandinam Scheme position of 90MVA. Beyond this level, the level of reinforcement necessary would essentially require all of the existing 132kV assets back to Wrexham to be changed and this would represent an investment out of all proportion to the additional benefit available.

7.37 SP Manweb has not considered the mechanism whereby the additional funding inherent in this hypothetical scenario that would be required could be obtained, nor how the capacity could be apportioned or the commercial agreements secured to allow this theoretical capacity to be developed. Rather, SP Manweb has simply answered the question posed by PCC by considering the technical limitations and taking a best

view approach regarding the environmental implications of that scenario.

7.38 Having reviewed this option, for the reasons explained in Dr Beddoes evidence (SPM/NETWORK/POE/BEDDOES/001A) SP Manweb remains of the view that the proposed Llandinam Scheme and proposed connection via the CC1 preferred corridor in the SP Mid Wales Connection Project are the schemes that best meet SP Manweb's statutory duties.

8. CONCLUSIONS

8.1 I have outlined the duties and obligations placed on SP Manweb in respect of its activities as a licensed DNO. I have explained SP Manweb's general approach to project development, to undergrounding and to obtaining land rights for placing its apparatus. I have explained the link between providing appropriate levels of service, meeting licence and legal obligations and the cost to customers for these services as well as balancing this with SP Manweb's environmental duties.

8.2 I have explained the approach to project evolution and scheme development involving consultation and how SP Manweb engages relevant expertise to form a multi-discipline team to progress line routeing.

8.3 I have explained that SP Manweb takes its lead from NPS EN5 (CD/COM/003) paragraphs 2.8.8 and 2.8.9 to determine the balance that should be considered when assessing whether the benefits from using underground cable would outweigh the additional cost and impacts of undergrounding. I have then considered the assessment of the Llandinam Scheme against the national policy approach to undergrounding and have explained why undergrounding is not justified in this instance.

8.4 I have then summarised the Llandinam Scheme and I have summarised a high level overview of the alternatives that we have considered and that we have been asked to consider.

8.5 I have highlighted the key aspects of alternatives to the Llandinam Scheme. In relation to each alternative, I have then indicated why SP Manweb believes that the alternatives are not to be preferred in comparison with the status quo of the Llandinam Scheme together with the currently proposed SP Mid Wales Connections Project.

8.6 SP Manweb believes that, taking account of its statutory duties, for the amount of generation that it is currently contracted to connect,

delivering the Llandinam Scheme (together with the currently proposed SP Mid Wales Connections Project) is and remains the preferred option.