

APPENDIX 1C Scoping Report, November 2007

PROPOSED REINFORCEMENT TO THE ELECTRICAL DISTRIBUTION SYSTEM

132kV Overhead Line Between Legacy and Oswestry

Scoping Report

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1.0 Introduction

- 1.1 SP Manweb has identified a need to reinforce the existing 132kV network which presently supplies electricity to 80,000 customers located in the area south of Wrexham.
- 1.2 Preliminary investigations indicate that this could be achieved through the establishment of a new overhead line connection between Legacy substation (near Wrexham) and Oswestry substation (on the northern outskirts of Oswestry). The proposed scheme would increase the capacity of the system whilst improving the quality, reliability and security of the region's electricity supply.
- 1.3 Desk-based investigation and field surveys were undertaken as part of an initial appraisal of the alternative overhead line connection routes. This initial 'Routeing Study' identified the preferred overhead line connection route. Public consultation on the route was undertaken in February 2007. In addition to exhibition material, a Consultation Document has been produced, which explains the project, the environmental characteristics of the study area and the process by which the originally preferred route was selected. This Scoping Report should be read in conjunction with the Consultation Document, and also with the Report on Consultations.
- 1.4 Following concerns raised during public consultation on the scheme, an alternative route was identified for the section between the Ceiriog valley and Gobowen, which avoided crossing Ifton Meadows Local Nature Reserve. This route was subject to public consultation during September 2007. This alternative route has been confirmed as the proposed route. An application will be submitted to the Secretary of State, the Department for Business, Enterprise and Regulatory Reform (BERR) for consent under Section 37 of the Electricity Act 1989 to construct the new overhead line. SP Manweb will voluntarily submit an Environmental Statement to accompany the application.
- 1.5 The Environmental Statement will be prepared in accordance with the Electricity Works (Environmental Impact Assessment)(England and Wales) (Amendment) Regulations 2007. This includes preparing a Scoping Report and requesting a Scoping Opinion from the Secretary of State, BERR.
- 1.6 This Scoping Report provides a brief description of the proposed route and sets out the potential effects on the environment that it is considered should be assessed, together with their proposed methods of assessment. An indicative structure for the Environmental Statement is included at Appendix A.

2.0 Consultation

- 2.1 Consultation is an integral part of the SP Manweb approach to line routeing, and many bodies, both statutory and non-statutory, have been consulted from the inception of the project and throughout design development. It is intended that all interested parties are given the opportunity to comment upon the 'scope' of the Environmental Statement at an early stage to ensure that potentially significant environmental effects are considered. Appendix B details the statutory and non-statutory consultees to whom the Consultation Document has been issued.

3.0 Project Description

Proposed Route

- 3.1 The proposed route follows a broadly north-south alignment through Wrexham Borough and the borough of Oswestry, in Shropshire. It passes through a small section of the district of North Shropshire, in the vicinity of St Martin's village. It is approximately 20.6km overhead line, with 3km underground cable. **Figure 1**, the proposed route plan, shows a route which avoids settlements, areas of high amenity, cultural or nature conservation value, whilst maximising the potential of the existing landform and vegetation for screening purposes.

Route From Legacy to Dee valley area

- 3.2 The preferred route leaves the substation as an underground cable, taking a south easterly route along the existing road system to Pentre Bychan via the B5097 Bronwylfa Road and B5426, Smithy Lane, up to its junction with the B5605, Wrexham Road. East of Wrexham Road it emerges onto a wood pole support and continues in a south-easterly direction across open farmland, to skirt around the northern boundary of Hafod Community Park(which is also Johnstown Newt Sites SAC) to Hafod Road. The route corridor here occupies a narrow strip of land between Hafod Community Park and the A483(T).
- 3.3 Crossing Hafod Road and the A483(T) in the vicinity of the bridge taking Hafod Road over the trunk road, the route continues in a south-easterly direction to a point west of the fishing lakes at Sontley. From here it would follow a more southerly route for approximately 1km before again heading in a south easterly direction through agricultural land, crossing Wat's Dyke, and then heading in a south-easterly direction between Moreton Below and Gyfelia. There are several farms and isolated properties within this area, and the route has been aligned to avoid close proximity to these properties.
- 3.4 Particular issues identified to be considered in detailed routing:
- Potential effect on several known archaeological sites in the vicinity of the substation during cable installation
 - Proximity to Johnstown Newt Sites SAC and Hafod Community Park
 - Potential tree loss where route is constrained between Hafod Tip and A483(T)

Crossing River Dee and River Ceiriog

- 3.5 From near Gyfelia, the route takes a south-easterly and then south-westerly direction in the vicinity of Park Eyton, in order to skirt around the edge of land within the Essential Setting of Wynnstay Park. It then takes a southerly direction through agricultural land following a clough woodland associated with a River Dee tributary. To the south east of Park Farm, the route changes direction to follow a south-westerly route beneath the existing 132kV and 400kV overhead lines and then turns south to a river crossing point in the vicinity of Coedleoedd Wood. This river crossing point utilises an existing break in the valley woodland and the proposed line is able to follow the natural topography.
- 3.6 From the River Dee crossing the route runs south through an attractive valley area associated with the River Ceiriog. The route through this area follows the natural contours of the valley along the valley floor to Tenement. It crosses the River Ceiriog just east of the hamlet, following a south-easterly alignment across the valley and exploiting a small break in woodland on the eastern valley side. Some tree removal may be necessary to widen this gap.
- 3.7 The route crosses beneath the existing 132kV power line south of Lower House Farm, and continues in a south-easterly direction across undulating fields to

cross the B5069 between the northern edge of St Martin's village and Street Dinas.

3.8 Particular issues identified to be considered in detailed routeing:

- Crossing of the River Ceiriog may require localised tree removal
- Proximity to northern and eastern fringes of St Martin's village

Approach to Oswestry Substation

3.9 The route crosses the B5068 (Ellesmere Road) immediately east of St Martin's, and turns to follow a south-westerly alignment through the Upper Wiggington area. It crosses the Shropshire Union Canal to the north of New Marton locks. From here the route runs south through lower lying land, passing to the west of the small settlements of Henlle and Hindford but adjacent to Fernhill Pastures SSSI and Butts Wood. It passes to the west of the listed building of Great Fernhill. From near Great Fernhill, the route runs in a westerly direction, crossing the main line railway and Whittington Road (B5009) and running through an area of agricultural land between Oswestry Orthopaedic Hospital to the north and Park Hall Farm and Oswestry showground to the south.

3.10 On crossing the A5 the route then runs parallel to this road in a southerly direction towards Oswestry substation. Due to the presence of numerous other distribution lines occupying the narrow corridor of land between Old Oswestry Fort and the A5, including an existing 132kv overhead line, the proposed route would be laid as underground cable from a point just east of the A5 crossing to its entry to Oswestry substation (approximately 1.4km).

3.11 Particular issues identified to be considered in detailed routeing:

- Close proximity to Fernhill Pastures SSSI
- Adjacent Butt's Wood (Great Fernhill) for c. 0.2km

Scheme Characteristics

3.12 The details of the proposed reinforcement scheme are relevant as these inform the extent of area affected and the likely nature of potential effects. These are detailed in the Consultation Document, and summarised below. **Figure 2** illustrates the proposed wood pole support types.

3.13 The pole support types to be used include wooden single poles and wooden H poles. Spans (distances between supports) vary between a minimum of 60m and a maximum of 135m, with an average span being 100m.

3.14 The statutory minimum ground clearance for a 132kV overhead line is 6.7m. The line must be designed to afford this clearance in all circumstances. Pole sizes will be in the range of 10.5m to 16m, with a further 2.5m in the ground. Steelwork and insulators to support the conductors will be fitted above, adding approximately 2m to the overall line height.

3.15 The largest H pole structure, for failure containment, comprises 2 poles, 6m apart. Some supports will need to be further secured with stays, extending the area of land take. The maximum land take for such a structure is approximately 160 square metres.

3.16 Erection of wooden poles requires excavation to position bracing, earth mats, and poles. Excavation is normally backfilled with the original materials, any surplus being removed from site.

- 3.17 Conductors (overhead lines) are strung under constant tension. The conductors are held aloft at all times and do not touch the ground or any other structures.
- 3.18 Wooden poles are transported on general purpose 4 wheel drive cross-country vehicles which have incorporated lifting devices. Drums of conductors are delivered as close as possible to pole sites, using similar vehicles or adapted tractors if necessary.
- 3.19 The maximum overall working area at pole installation sites is estimated to be 30m x 30m, including the largest area of permanent land take with stays and the working and passing area around this land take. Typically the working area along the whole corridor is much less, limited to the area used for vehicles passing between pole installation sites. Existing access tracks in use for farming and land management are used where possible. Storage requirements on site are typically contained within the overall working area.
- 3.20 Anticipated rate of progress of construction is three to four weeks per kilometre.
- 3.21 Noise levels generated during construction are likely to be low. The contractor will be required to maintain low noise levels in the vicinity of dwellings or other noise sensitive receptors by employing sufficiently silenced machinery and by distancing, or where practicable, screening noisy items of plant or activities.
- 3.22 Method statements will be issued to the contractor and rigorously applied for construction and/or dismantling in or near sensitive sites.
- 3.23 Generally a distribution line requires very little maintenance. It would be regularly inspected. Refurbishment is required after approximately forty years, depending upon local conditions.
- 3.24 Underground cables will be positioned within existing highways.

4.0 Environmental Issues and Scope of Assessment

Regulatory requirements

- 4.1 Regulation 4(1) of the Electricity Works (EIA) Regulations requires the applicant for a Section 37 consent to provide such of the information referred to in Part 1 of Schedule 4 to the Regulations as is reasonably required to assess the environmental effects of the development. In particular, the following information is required:
- 4.2 A description of the **environment likely to be significantly affected** by the development, including:
- population
 - fauna
 - flora
 - soil
 - water
 - air
 - climatic factors
 - material assets, including the architectural and archaeological heritage
 - landscape; and
 - the inter-relationship between the above factors.
- 4.3 A description must also be given of the **likely significant effects of the development** on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development.
- 4.4 Where significant adverse effects are identified, the Environmental Statement must include a description of **mitigation measures** envisaged.

Environmental Baseline

- 4.5 A description of the existing environment is given in the Consultation Document, Section 4 and accompanying Figures 4.1-4.12 inclusive.

Environmental issues to be considered

- 4.6 **Table 1** identifies those effects which are likely to be significant, and those not likely to be significant but which merit consideration in the ES. The proposed method of impact assessment is also outlined.

Aspects not included in scope

- 4.7 The following issues/aspects are considered unlikely to give rise to significant environmental effects, and will not be considered further within the impact assessment:

Air and climatic factors

- 4.8 The project is for a static item of distribution infrastructure. No significant effects on air or climatic factors are anticipated as a consequence of the existence of the project.

Hydrology/water quality

- 4.9 Any localised effects due to construction activity are considered unlikely to be significant. SP Manweb is committed to the production of an **Environmental Management Plan**, which will control details of working methods; to mitigate the detailed effects on the environment; to achieve appropriate restoration on

completion; and to apply any monitoring or control required by conditions attached to the Section 37 consent.

Dust

- 4.10 There is potential for localised generation of dust during the construction of the overhead line, due to vehicle movements and excavations. Earth movement will be controlled within the construction area to avoid unnecessary dispersal of dust. Any localised effects are considered unlikely to be significant.

Assessing the nature and significance of an effect

- 4.11 Assessment of whether the effect of the proposed overhead distribution line on any particular topic is likely to be adverse or beneficial is a matter of professional judgement, applied on a case-by-case basis.
- 4.12 The significance of a likely effect is a function of its character (magnitude, duration, etc.) and the value of the resource being affected. It is possible with some topics, such as noise or air quality, to use measurable, quantifiable guidelines or legislative criteria to establish the threshold at which an effect becomes significant. For many topics, however, the assessment of significance is more difficult because the effect has to be measured using a combination of quantitative and qualitative criteria, which are specific to the project and environment being considered.
- 4.13 For the purpose of this Environmental Statement, where there are no established guidelines or legislative criteria, effect will be categorised into:
- None - no detectable change to the environment
 - Minor - a detectable but non-material change to the environment
 - Moderate - a material but non-fundamental change to the environment
 - Major - a fundamental change to the environment.
- 4.14 Any effect of the proposal judged to be either major or moderate will be treated as significant in terms of the Electricity Works (EIA) Regulations. Any effect judged to be minor would not be considered as significant.

Further detail on scope of assessments

- 4.15 Consultations have taken place with Natural England and CCW regarding the scope of ecological baseline surveys, and with County Archaeologists regarding the extent and nature of baseline information gathering required to ensure an adequate assessment of impacts.
- 4.16 Appendix C outlines the proposed method of ecological impact assessment and the proposed scope of ecological baseline survey put forward to Natural England and CCW (*original TEP refs: 700.112, 700.086a and 700.087*).
- 4.17 Appendix D details the proposed scope of cultural heritage impact assessment (*original TEP ref: 700.102a*).
- 4.18 Appendix E details the proposed scope of landscape and visual impact assessment, and lists proposed viewpoints for assessment. Viewpoints will be discussed and agreed with Natural England, CCW and the relevant local planning authorities

5.0 Scoping Opinion

- 5.1 This Scoping Report constitutes a formal request for a scoping opinion from the Secretary of State, BERR, under Regulation 7(1) of the Electricity Works (Environmental Impact Assessment)(England and Wales) (Amendment) Regulations 2007.

Table 1: Potential Significant Environmental Effects and Proposed Method of Impact Assessment

Landscape and Visual	
Potential Environmental Effects	Direct physical changes to individual landscape elements Changes in landscape character Changes to existing views/visual amenity Changes to the character / quality of historic landscapes
Sources of Environmental Effects	Construction machinery / plant / scaffolding Overhead lines and wooden poles Felling of trees Temporary storage areas Access routes
Receptors	Local residents Visitors / tourists / ramblers Users of the A5, A539, other roads and the railway Designated sensitive landscapes
Prediction Method	Evaluate published landscape assessments Establish baseline landscape character and views along route of overhead line Establish the value and sensitivity of the landscape and its capacity to accommodate change Establish the importance of views and the relative sensitivity of receptors. Determine using information provided within the project design chapter the nature of the effect of the development on landscape and views, magnitude of the effect and its significance.
Significance Criteria	There are no specific significance criteria . Follow guidance in published material (see below)
Mitigation Measures	Recommend appropriate avoidance, reduction or compensation techniques e.g. planting schemes / landscaping – indicating expected time for this to become effective.
Sources of Information	Landscape Institute Guidelines for Visual Assessment (2002) The Countryside Agency Landscape Character Assessment Guidelines (2002) Shropshire County Council Landscape Assessment Wrexham LandMap 2004 Wrexham Landmap SPG (Mar 2007) The Countryside Agency Countryside Character Volume 5: West Midlands (1999)
Ecology and Nature Conservation	
Potential Environmental Effects	Loss and damage to vegetation during construction in sites of national, regional or local nature conservation importance e.g. River Dee SSSI, Wildlife Sites Localised wildlife disturbance to sensitive species and/or their habitats (including 'Priority' habitats, BAP species and protected species) resulting from the construction process and any on-going maintenance works Disruption to bird flight patterns / bird strike
Source of Environmental Effects	Overhead lines and wooden poles Removal of trees and other vegetation during construction and to maintain clearances during operation Ground excavations Movement of construction machinery / plant. Access roads
Receptors	Protected species Sites of national / regional and local nature conservation importance Species and habitats of biodiversity importance (identified during consultations)

Prediction Method	Phase 1 habitat survey Determine presence of habitats of designated nature conservation importance Identify 'Priority' habitats and species Determine presence / absence of protected species e.g. bats, badgers, great crested newts following, where required, using Natural England/CCW guidance on survey techniques. Determine, using information provided within the project design chapter, the nature of the effect of the development on ecology, the magnitude of the effect and its significance.
Significance Criteria	The Hedgerow Regulations 1997 The Wildlife and Countryside Act 1981 EC Habitats Directive Conservation (Natural Habitats, & c.) The Countryside and Rights of Way Act 2000 The Badger Act 1992 PPS9: Biodiversity and Geological Conservation TAN5: Nature Conservation and Planning (1996) The approach for assessment follows '<i>Guidelines for Baseline Ecological Assessment</i>' (Institute of Environmental Assessment, 1995). The detailed methods for evaluation of impact significance follow IEEM '<i>Guidelines for Ecological Impact Assessment in the United Kingdom</i>' (version 7 July 2006).
Mitigation Measures	Where protected species would be affected, licences would be required from Natural England or the National Assembly for Wales. Appropriate measures to avoid, reduce or compensate for adverse environmental effects.
Sources of information	Shropshire Biodiversity Action Plan Wrexham Biodiversity Action Plan UK BAP WBG Vision BAP Gibbons et al (1993) The New Atlas of Breeding Birds in Britain and Ireland Breeding Bird Atlas (Shropshire Ornithological Society) IEEM '<i>Guidelines on Ecological Impact Assessment in the United Kingdom</i>' (version 7 July 2006) Information provided by Natural England (SSSI and SAC Citations, Ancient Woodland) Information provided by Countryside Commission for Wales (CCW) (SSSI and SAC Citations, Ancient Woodlands, Protected Species) Shropshire Wildlife Trust – Information on protected species and Wildlife Sites North Wales Wildlife Trusts – Information on protected species and Wildlife Sites RSPB consultation response regarding breeding waders and other birds. COFNOD (North Wales Environmental Information Service)
Cultural Heritage	
Potential Environmental Effects	Loss and damage to important archaeological / historical features / sites Visual effects on the setting of Scheduled Monuments, Listed Buildings and other archaeological/cultural heritage sites
Source of Environmental Effects	Construction of temporary access routes Earth movements during construction Ground excavations for erection of wooden poles Undergrounding of cables Presence of overhead lines and wooden pole support structures. Felling of trees

Receptors	Scheduled Monuments Local Sites of Archaeological Importance Listed Buildings Conservation Areas Historic Landscapes, Parks and Gardens Unknown archaeological resources
Prediction Method	Desk based study and walkover survey along proposed route to determine the historical and archaeological potential along the route. Determine, using information provided within the project design chapter, the nature of the effect of the development on the archaeological potential along the route, the magnitude of the effect and its significance.
Significance Criteria	PPG15: Planning and the Historic Environment PPG16: Archaeology and Planning
Mitigation Measures	Watching brief may be required to be present during construction if there is potential for previously undiscovered sites of archaeological importance.
Sources of information	Local Plans and UDPs Historical Landscape Assessment County and Local Councils/CADW/RCAHMW/English Heritage
Soils and Land Management	
Potential Environmental Effects	Temporary disruption and disturbance from the construction process Reduction in area of productive agricultural land Soil disturbance/erosion Effects on cultivation patterns/sporting estates
Sources of Environmental Effects	Ground excavations/temporary soil moving Vegetation removal Overhead lines and wooden poles; stays Temporary storage areas and access roads Undergrounding of cables
Receptors	Land owners Soil
Prediction Method	Establish existing agricultural land quality along the route of the overhead line (DEFRA Agricultural Land Classifications), current agricultural land practices and soil properties Determine the potential for soil erosion/compaction during construction Non-confidential information on sporting estates from SP Manweb Wayleave Officers who will be discussing the possible effects with farmers as part of their wayleave negotiations. Determine, using information provided within the project design chapter, the nature of the effect of the development on land management and soils, the magnitude of the effect and its significance.
Significance Criteria	DEFRA Agricultural Land classifications PPS7: Sustainable Development in Rural Areas
Mitigation Measures	Reinstate land used for storage and temporary access roads.
Sources of Information	O/S Landranger and Explorer Maps (1:50000 and 1: 25000) DEFRA Agricultural Land Classification Maps, Soil and Geology Maps
Trees and Woodlands	
Potential Environmental Effects	Removal of trees or parts of woodland to enable construction and maintain minimum safety clearance from proposed overhead line Increase of windthrow risk
Sources of Environmental Effects	Vegetation removal Overhead lines and wooden poles; stays Temporary storage areas and access roads
Receptors	Tree/woodland stock of locality

Prediction Method	Desk based study of maps and site inspection along proposed route corridor to identify position and characteristics of woodlands and trees potentially affected. Site assessment to include an assessment of retention value of trees and woodlands. Determine, using information provided within the project design chapter, the nature of the effect of the development on woodlands, the magnitude of the effect and its significance.
Significance Criteria	No specific significance criteria.
Mitigation Measures	Location of supports to avoid trees identified as having high retention value, where possible. Replacement planting for any felling
Sources of Information	O/S Landranger and Explorer Maps (1:50000 and 1: 25000) Woodland records provided by Forestry Commission
Tourism and Recreation	
Potential Environmental Effects	Footpath diversions / re-routing Restrictions on angling Disruptions to tourist routes Effects on the setting of tourist destinations e.g. National Trust sites, historic parks and gardens
Source of Environmental Effects	Overhead line and wooden poles Access roads Storage areas
Receptors	Local residents Tourists/ramblers/visitors Anglers
Prediction Method	Establish existing tourism and recreational provisions and the value of those provisions, the recreational/tourism value of the landscape, Public Rights of Way, presence and importance of long distance footpaths/National Trails and usage of angling facilities. Determine, using information provided within the project design chapter, the nature of the effect of the development on tourism and recreational facilities within the area, the magnitude of the effect and its significance.
Significance Criteria	PPG17: Sport, Open Space and Recreation
Mitigation Measures	Avoid important recreational/tourist sites by modifying the route of the overhead line. Consider alternative footpath routes, recreational sites, and recreational/tourist facilities as compensation for any losses or disruptions to existing provisions. Reinstatement of footpaths/recreational sites up on completion of the development.
Sources of information	National Trust Local Authorities County Councils
Planning and Development Proposals	
Potential Environmental Effects	Conflict with proposed development Conflict with aims of statutory planning policy
Source of Environmental Effects	Construction of overhead line
Receptors	Plans and Policies

Prediction Method	Identify planning and development proposals within study area/route corridor where aims potentially conflict with overhead line routeing. Committed development defined as one for which full or outline planning permission has been granted. Planning proposals/designations considered where they can be found in an approved development plan or in a published consultative draft. Cut-off date for the inclusion within the ES to be the date on which SP Manweb receives the Scoping Opinion.
Significance Criteria	None applicable; judgement and consultation with LPA
Mitigation Measures	Avoidance of conflict wherever possible through route selection process.
Sources of information	Local Planning Authorities
Mineral Resources and Landfill Sites	
Potential Environmental Effects	Sterilisation of mineral resources Sterilisation of potential landfill sites
Source of Environmental Effects	Overhead lines and wooden poles Access roads
Receptors	Mineral Resource
Prediction Method	Establish the existing location of mineral resources and potential landfill sites along the proposed route. Determine, using information provided within the project design chapter, the nature of the effect of the development on mineral resources, potential landfill sites, closed landfill sites and contaminated land, the magnitude of the effect and its significance.
Significance Criteria	No specific significance criteria
Mitigation Measures	Diversion of line route to prevent sterilisation of a mineral resource or disturbance of contaminated land
Sources of information	Coal Authority Local Authorities County Councils
Infrastructure	
Potential Environmental Effects	Temporary disruption and disturbance from the construction process, affecting: • road usage • railway services • movements of boats along the Shropshire Union Canal • existing services e.g. telecommunications, gas pipelines, electricity distribution networks, waste water drainage systems, water mains • aircraft flight paths Permanent effects on area of land available and operational requirements associated with other infrastructure, including improvement / development schemes (e.g. possible A5 widening scheme)
Source of Environmental Effects	Overhead lines and wooden poles Scaffolding, construction equipment and plant Ground excavations Access roads
Receptors	Road, rail and canal users Statutory undertakers

Prediction Method	Establish locations of existing infrastructure. Establish proposals for A5 widening scheme Determine, using information provided within the project design chapter, the nature of the effect of the development on existing infrastructure and the A5 widening scheme, the magnitude of the effect and its significance.
Significance Criteria	County Council Guidance
Mitigation Measures	Measures to ensure that there is no effect on land and operational requirements associated with possible future A5 widening. Placing existing services e.g. telephone lines underground. Undergrounding or deviating the overhead line where it is not possible to achieve sufficient clearance to cross major roads, railways or canals using wooden pole supports.
Sources of information	Shropshire County and Wrexham County Borough highways departments' Codes of Practice, Specifications and Procedures
Physical Effects (EMF, Noise)	
Potential Environmental Effects	Effects of electric and magnetic fields (EMF) on human health Effects of EMF on livestock Effects of audible noise generated by electrical distribution line conductors Radio/television interference
Source of Environmental Effects	Operational equipment associated with high voltage overhead lines
Receptors	Local residents, workers and visitors to the area Local wildlife and livestock
Prediction Method	Use typical calculations of electric field strengths and magnetic field strengths, potential audible noise levels generated by proposed line design.
Significance Criteria	No statutory regulations in the UK limiting exposure of people to power-frequency electric or magnetic fields. Assess against National Radiological Protection Board (NRPB) field strength guidelines on level for human exposure.
Mitigation Measures	Follow current advice of Government and NRPB. Avoid any potential audible noise effects by routing away from inhabited property. Department of Trade and Industry (Radio Investigation Service)
Sources of information	NRPB and Government advice

Appendix A: Indicative Structure of Environmental Statement

Preface

Non-technical Summary

Contents

Part A: Introduction

- Background
- Overview of ES purpose
- Legal context/statutory consents procedure
- Consultations and studies undertaken
- Potential significant effects identified during scoping

Part B: Project Description

- Project context – need, objectives, alternatives considered
- Project characteristics – overhead line design, construction and technical issues

Part C: Approach & Method

- Overview
- Route selection process
- Assessment of effects

Part D: Baseline Studies

- Study area inventory

Part E: Definition and Evaluation of Route Options

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- Consultations
- Further route evaluation

Part F: Environmental Impact Assessment

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- Visual effects
- Effects on the landscape
- Effects on ecology and nature conservation
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- Effects on planning and development proposals
- Effects on mineral resources and landfill sites
- Effects on infrastructure
- Physical effects arising from the use of high voltage overhead transmission lines and equipment
- Summary of effects
- EIA follow-up and Environmental Management Plan

For each topic the chapter will be structured:

- Baseline environment
- Method of assessment
- Potential receptors
- Impact prediction

- Significance criteria
- Mitigation and monitoring

Part G: Negotiations with landowners

Part H: Conclusions

Part I: Appendices

- Consultees
- Glossary and abbreviations
- References and sources of information

Appendix B: Recipients of the Consultation Document

National Trust East Wales Area Office
Oswestry Ramblers Association
Shropshire Wildlife Trust
British Waterways, Wales & Border Counties
Shropshire County Council
North Wales Wildlife Trust
The RSPB (A Gouldstone)
The RSPB (C Wilkinson)
RSPB Wales
Forestry Commission North Wales
Forestry Commission Wales
Forestry Commission Ludlow Area Office
Royal Commission on the Ancient and Historical Monuments of Wales
DEFRA
NFU
NFU Office
Department of Trade and Industry
North Wales Fire Service
Highways Agency
BT
Dee Valley Water plc
Transco Wales and the West Network
National Grid Company Ltd
National Grid UK Gas Distribution
Wales & The West Utilities Ltd
Wrexham County Borough Council
Shropshire County Council
The Borough of Oswestry
North Shropshire District Council
Natural England
Countryside Commission For Wales
English Heritage
CADW
Clwyd-Powys Archaeological Trust
Environment Agency
Environment Agency Wales
Environment Agency (North West)

Appendix C: Ecological Impact Assessment Method and Proposed Scope of Baseline Surveys

A: Impact Assessment Methodology

The approach for assessment follows 'Guidelines for Baseline Ecological Assessment' (Institute of Environmental Assessment, 1995) and 'Guidelines for Ecological Impact Assessment in the United Kingdom' (Institute of Ecology and Environmental Management, version 7 July 2006)

Ecological impact assessment (EclA) is a means to identify, quantify and evaluate potential impacts of defined actions on ecological receptors; being ecological features or resources affected by a particular action or stress.

The traditional approach to assigning significance to an impact upon a receptor is to tabulate the value of the receptor versus the magnitude of the impact. Recently revised IEEM guidance specifically recommends against this approach for EclA.

In summary, the following procedure was undertaken during this ecological impact assessment:

- Identification and evaluation of ecological receptors;
- Identification of the predicted biophysical changes likely to affect the valued ecological receptors;
- Assessment of the significance of the biophysical changes predicted;
- Identification of the scope for refinement of the project to include avoidance, mitigation, amelioration, compensation and enhancement measures;
- Assessment of the predicted residual impacts upon the valued ecological receptors;
- Provision of advice on the consequences for decision making of the residual impacts based upon the value of the ecological receptor affected.

Ecological valuation determines the importance of ecological receptors. The value of an ecological receptor is used to determine the legal, policy and development control consequences of a significant impact. The criteria and standards used for determining whether ecological impacts are significant vary and are often subjective; IEEM EclA guidance defines a significant impact, in *ecological* terms, as

"an impact (adverse or positive) on the integrity of a defined site or ecosystem(s) and/or the conservation status of habitats or species within a given geographical area, including cumulative impacts".

Site integrity is defined in the Government Circular ODPM 2006/05 as

"...the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of species for which it was classified".

Baseline information – identification of ecological receptors

During assessment, the following nature conservation features will be considered:

- designated nature conservation sites (International, European and National);
- non-statutory nature conservation sites (Local Nature Reserves, Local wildlife sites)
- protected species (European and National); and

other habitats and species of conservation significance (UK/County Biodiversity Action Plan Species and Habitats).

The following have been identified through initial consultations and desktop survey as potential ecological receptors:

- Johnstown Newt Sites SAC (Stryt Las A'r Hafod SSSI)
- Lake Bala and River Dee SAC
- Fernhill Pastures SSSI
- Ifton Meadows Local Nature Reserve
- European Protected Species: Otter, Bats
- Nationally Protected Species: Great Crested Newts, Reptiles, Water Vole, Badgers, Birds
- UK BAP Species: Doormouse, Hedgehog

Determining value

The relative value and importance of ecological receptors are determined in accordance to a geographical frame of reference to provide consistency. The ecological receptor is considered valuable (or has the potential to become valued) on the following scale:

- International;
- UK;
- National;
- Regional;
- County (or Metropolitan);
- District (or Unitary Authority, City or Borough);
- Local or Parish; or
- Within immediate zone of influence only.

This frame of reference may be adjusted as appropriate to local frameworks, as indicated above.

The level of nature conservation value of a designated site is that assigned through its designation. The nature conservation value of feature designations, such as TPO's and important hedgerows, must be assessed independently of the statutory designation, which may also incorporate social, community and economic value.

In the case of habitats such as reedbeds, field boundaries and urban grasslands, which are prioritised in the UK and/or County BAPs, it is inappropriate to mechanistically assign them a national or county value. The appearance of these habitat types in a BAP is to guide conservation action and is not intended to imply importance of the habitat.

Baseline Ecological Surveys

Scope of baseline ecological surveys and scheme details as they relate to ecological receptors have been discussed with Natural England and CCW. Reports as issued to Natural England and CCW are copied directly into this appendix at section B (original TEP references: 700.087 and 700.086rev.A).

Impact assessment and mitigation

Impacts upon ecological receptors will be described as either positive or negative, and the scale of their importance will relate directly to the value previously determined for the ecological receptor (International, UK, national, regional, etc.) Where habitats or species are present in various parts of the route corridor, values will be applied to each section of the route (as the value may alter over the whole route corridor).

Impacts include those that are predicted to be direct, indirect, temporary, permanent, cumulative, reversible or irreversible. The assessment will be carried out based on the phase in which the impact is predicted to occur (i.e. construction, operation, etc.). The source, nature and duration of the predicted impact will be identified and the predicted effects on the receptors described.

Once impacts have been assessed and described, mitigation strategies and measures will be detailed and assessed. An indication will be given of whether a predicted impact can be mitigated or prevented (by avoidance), and residual impacts will be assessed. Mitigation recommendations will be provided where necessary to fulfil any legal requirements and follow relevant best practice guidelines.

Habitats Regulations Assessment: information to inform appropriate assessments

The indicative proposed route directly crosses the Lake Bala and River Dee SAC, and is immediately adjacent to Johnstown Newts Site SAC.

There may be a requirement to provide information to inform appropriate assessments to be completed subsequently by the competent authority under The Conservation (Natural Habitats &c) Regulations 1994 (the 'Habitats Regulations'). Should CCW/Natural England determine in their Scoping Opinion that there is a 'likely significant effect' on any of the SAC (Natura 2000) sites along the route (and therefore that appropriate assessments are required) a separate section setting out any such information requested will be included in the ES.

In order to carry out the 'Test of Likely Significance', CCW will need details of the method statement for the project for each of the European sites before an assessment can be made (CCW email 27.06.07).

B: Proposed Scope of Baseline Surveys

Introduction

1. TEP has been asked to provide advice to SP Manweb regarding the anticipated scope of baseline ecological surveys for the above project, including identifying where survey periods are seasonal/time critical.
2. TEP has considered the latest 'best practice' guidance on ecological impact assessment (IEEM guidelines, final draft February 2006). Together with our understanding of the nature of the project, this has enabled preparation of a draft scope for ecological baseline surveys for discussion and agreement with key nature conservation agencies (English Nature and CCW).

Ecological Information Provided Through Initial Consultations

3. The following species have been identified by consultees (Local authorities, English Nature, CCW, local wildlife groups) as having a potential presence and which may be adversely affected by the proposal within the routeing study area:
 - Otters (EN, CCW)
 - Badgers (EN)
 - Great Crested Newts (EN)
 - Bats (roosts in large trees) (EN)
 - Reptiles (CCW)
 - Water voles (CCW)
 - Birds (CCW).
4. It was also noted by consultees that there are 'flyways' (routes used by birds flying, typically following features or landmarks) along the rivers Dee, Ceiriog and Perry, and the Shropshire Union Canal, all of which are crossed by the preferred route, although there is little information on species and usage of the flyways.

Scheme Details/Project Commitments

5. In order to consider the appropriate scope of surveys, the potential for effects on species of concern needs to be identified. The details of the proposed reinforcement scheme are relevant as these inform the extent of area affected and the likely nature of potential effects. These are considered below.

Scheme Detail Notes

6. Line supports will be predominantly wooden single pole or H pole structures. Spans (distance between supports) vary between a minimum of 60m and a maximum of 135m, with an average span being 100m.
7. The largest H pole structure, for failure containment, comprises 2 poles, 6m apart. Some supports will need to be further secured with stays, extending the area of land take. The maximum land take anticipated is [#m], comprising a H pole structure stayed with approximately [# number] stays.
8. Erection of wooden poles requires excavation to position bracing, earth mats, and poles. Excavation is normally backfilled with the original materials, any surplus being removed from site.

9. Conductors (overhead lines) are strung under constant tension, they are held aloft at all times and do not touch the ground or any other structures.
10. Wooden poles are transported on general purpose 4 wheel drive cross-country vehicles which have incorporated lifting devices. Drums of conductors are delivered as close as possible to pole sites, using similar vehicles or adapted tractors if necessary.
11. Anticipated rate of progress of construction is three to four weeks per kilometre. Storage requirements on site are typically contained within the overall working area. The maximum overall working area at pole installation sites is estimated to be 30m x 30m, including the largest area of permanent land take with stays and the working and passing area around this land take. Typically the working area along the whole corridor is much less, limited to the area used for vehicles passing between pole installation sites.
12. Existing access tracks in use for farming and land management are used where possible.
13. Noise levels generated during construction are likely to be low. The contractor will be required to maintain low noise levels in the vicinity of dwellings or other noise sensitive receptors by employing sufficiently silenced machinery and by distancing, or where practicable, screening noisy items of plant or activities.
14. Method statements will be issued to contractor and rigorously applied for construction and/or dismantling in or near sensitive habitats.
15. Generally a distribution line requires very little maintenance. It would be regularly inspected. Refurbishment is required after approximately forty years, depending upon local conditions.

Project Commitments

16. Commitments to work in a certain way or to confirm the final route with defined distances of working or excavation from features of potential ecological sensitivity (eg watercourses) can assist in ensuring potential effects are avoided, thereby reducing the need for ecological survey. The following project commitments are proposed:
 - Land take kept to a minimum and the movement of construction plant and personnel would be limited to designated access and working areas;
 - Scrub clearance programmed to take place out of the March-July bird breeding season;
 - Any new access tracks would be temporary and comprise inert or neutral stone on a geo-textile base.
 - Habitat reinstatement according to the advice of a professional ecologist (in valuable habitats only identified in Phase 1 Habitat Survey);
 - Risk of contamination through accidental spillages from construction vehicles controlled by observance of SP Manweb's Environmental Management Systems;
 - Construction compounds sited away from ecologically sensitive sites to reduce the potential for construction disturbance;
 - Bird flight diverters used where the line would cross significant open watercourses utilised by waterfowl and waders or where significant daily or seasonal bird movements can be predicted (advised by BTO);

Potential Effects

17. There is potential for adverse effects from the overhead line to occur on designated sites of nature conservation value and on other habitats of ecological value.

- Designated Sites and Habitats of Value*
18. Effects on designated sites and on other valued habitats may occur due to loss of habitat. Important direct loss of habitat is not likely to arise as there are only limited numbers and very small areas of footprints of pole supports. Indirect loss or change may occur due to excavation for installation and by compaction or installation of access tracks.
- Species of Nature Conservation Concern*
19. The following potential effects could arise on species of possible nature conservation concern as identified by consultees.

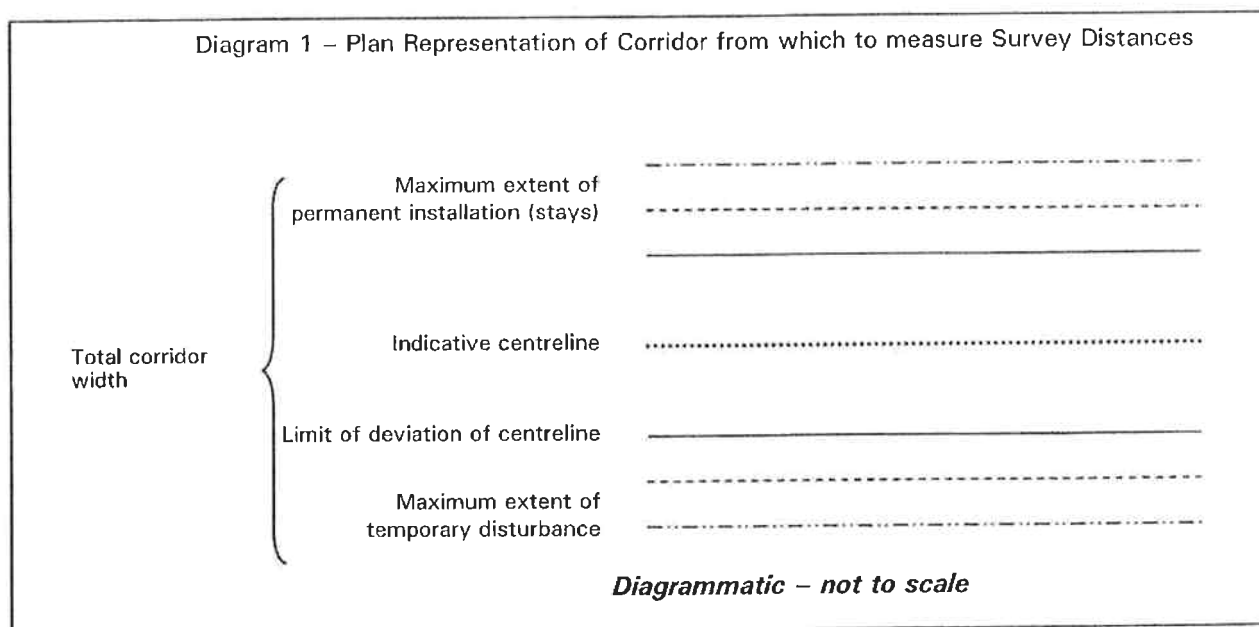
Table 1: Species of Nature Conservation Concern and Potential Effects

Species	Potential Effect
Otters	Disturbance, particularly to a breeding place (natal holt) or resting place (holt or couch). These are typically along rivers or streams and wetland habitat adjacent them. A minimum distance of 30m should be kept as an exclusion zone from a holt, with no working taking place in that zone. A DEFRA/Welsh Assembly Government licence is required for works which would cause disturbance to otters.
Badgers	Disturbance, particularly to a breeding or resting place (sett). A licence is required from English Nature (England) or CCW (Wales) for works with machinery or comprising excavations within 30m of an active sett. Licences are granted only for works to take place between July and November inclusive to avoid the badger breeding season.
Great Crested Newts	Disturbance to breeding areas (ponds) and foraging areas (typically rough grassland, scrub and woodland) within around 500m of a breeding pond. A licence is required from DEFRA/Welsh Assembly Government for works that could involve loss or destruction of newts or their habitat. This is generally considered to be within 500m of a known breeding pond, depending on the nature of the habitat to be disturbed. Licensed works could include use of newt fencing to exclude them from areas subject to line installation works.
Bats	Disturbance to roosting places. For the Legacy to Oswestry project, that would mean mature trees which show signs or potential for roosting bats (typically older deciduous trees with ivy or holes and/or areas of loose bark). If any trees have bat roosts, a DEFRA/Welsh Assembly Government licence will be needed to carry out the necessary lopping/felling.
Reptiles	Disturbance to resting or foraging places. As reptiles have wide ranges and are very mobile, and as the areas to be affected would be relatively small and only temporarily disturbed, potential for adverse effects is relatively low.
Water voles	Disturbance to habitat including watercourses and water vole burrows in their banks.
Birds	Loss or disturbance to habitat, particularly during the breeding season (typically between March and July inclusive). Obstructions over flyways could lead to increased collision risk.

Proposed Surveys

20. The proposed surveys need to consider the likely potential effects on receptors. As shown in Table 1 above, the key considerations are the proximity of potential habitat and the distances of areas of known sensitivity from areas where work will occur.

21. At this stage of the project, the precise route of the overhead line cannot be identified. An indicative centreline has been identified. From that centreline, degrees of tolerance can be identified which represent the maximum distance that the 'as built' centreline will be from the indicative centreline. Outside of the centreline will be an area in which permanent installations will occur. These include the excavations for the supports and their bracing and the extent of stays.
22. Further beyond this distance will be the working area within the corridor, where temporary effects may occur. It is important to identify these zones, shown indicatively at Diagram 1, prior to survey. This represents the total potential area affected by the works, from which the distances identified for species in Table 1 may apply. Additionally, access tracks to be used from adjacent roads and to avoid tracking over the middle of fields need to be considered. The extent of effects that may arise from use of tracks varies depending on whether the tracks are existing and to be trafficked using vehicles similar to those already in use (eg tractors and agricultural equipment) or whether new trackways will be installed.
23. The proposals for survey are presented in table ref. 700.086 Rev A. The table uses the basis for assessment as presented in the guidance on Ecological Impact Assessment set out in the latest Draft Guidance from the Institute of Ecology and Environmental Management.



700.086rev A: Legacy – Oswestry Reinforcement: Suggested Scope of Baseline Ecological Surveys

Ecological resource	Area to be Surveyed	Survey Timing Implications	Survey Method	Likely biophysical changes affecting resource
Designated sites of nature conservation importance	500m either side of route centre line	None	Desk based survey Consultation with EN & CCW	SACs – none anticipated as route avoids Johnstown Newt Sites SAC in Wrexham and crosses the Lake Bala and River Dee SAC (watercourse only is designated) in two locations (crossing River Dee and River Ceiriog) via overhead line. Work will be from either bank, with no temporary bridging required. <i>Should support poles and/or stays need to be positioned on the riverbank, 'project commitments' would need to include that construction methods would prevent any material entering the water/affecting water quality.</i> CCW/EN will need to carry out a 'test of significance' of proposals upon Johnstown Newt Sites SAC and Lake Bala and River Dee SAC, based upon project information provided by SP Manweb, to determine whether or not an Appropriate Assessment is required. A method statement will be required for crossing River Dee SAC. SSSI – none, avoidance of Stryt Las A'r Hafod (Wrexham) and Fernhill Pastures (Shropshire); as above for River Dee. County Wildlife Sites – none, avoidance. Ancient Semi-Natural Woodland – none, avoidance LNR is being actively managed for skylark and meadow pipit – ground nesting birds. Potential disturbance of nesting sites/habitat during construction. Needs to be discussed with LNR management. It may be sufficient desk records exist to avoid survey, or project commitment regarding timing of works may mean survey is unnecessary.
Iffon Meadows Local Nature Reserve a) Breeding Birds b) Heathland habitat	a) Extent of LNR affected b) Total extent of corridor plus 20m each side	a) May-June; two visits; b) March-Sept	a) BTO Method for Breeding Bird Survey (1999) – transects and point counts b) Phase 1 Habitat Survey, (JNCC 2003 guidance)	

Ecological resource	Area to be Surveyed	Survey Timing Implications	Survey Method	Likely biophysical changes affecting resource
Valuable habitats/flora	Total extent of corridor	Mar- Sept for field survey	Desk study of species records for flora listed on Annex 1 of EC Habitats Directive or international Red Data Books; on Schedule 1 of W & C Act, Red Data Book Species, Nationally Scarce Species, Species of County Importance. Phase 1 Habitat mapping and Target Notes	Construction phase: Damage due to temporary access tracks and excavations for support structures. (temporary loss?)
Badgers	Route corridor plus 30m either side	Preferably March-April when activity is high and plant growth low.	Walkover survey to identify presence of badger setts, signs of badger activity, as part of Phase 1 Habitat survey.	Construction phase: Disturbance, temporary loss of foraging habitat. Will seek to avoid working within 30m of any sett and obtain an appropriate licence where this is unavoidable.
Bats	Mature trees within route corridor (as these could be felled)	Preferably when trees are bare (Nov-Apr)	Visual inspection from the ground for bat roost signs or potential, by EN licensed bat surveyor.	Construction phase: Tree felling or lopping could affect bat roosts. Once the exact alignment of the route has been determined, trees which need to be lopped or removed and assessed as having bat roost potential would be dismantled or felled (as appropriate) under the direction of an ecologist. This would be undertaken at a time of year when bats are most able to relocate (in April and in October, but weather dependent). Where necessary, mitigation measures such as bat boxes would be provided in advance of this operation. Removal of these trees at the appropriate time removes the need for emergence surveys.
Birds	Whole corridor	As for habitat survey	Consultations with BTO, RSPB, Local Wildlife Trusts Habitat survey as for Phase 1	Construction phase: Temporary disturbance during the breeding season for, at most, one breeding season. Loss of mature trees used as nesting sites. Diverters can be fitted over water course flyways or monitoring to assess collisions at advice of conservation agencies.

Ecological resource	Area to be Surveyed	Survey Timing Implications	Survey Method	Likely biophysical changes affecting resource
Great Crested Newts and other amphibians	Route corridor plus 150m either side	Between mid-March and mid-June	Visual survey of ponds/waterbodies including habitat survey form and photographic record, combined with egg searching of all ponds within survey zone.	Ponds avoided during routeing, minimal impact upon aquatic phase. Construction could have impact upon newt movement and disturbance during their terrestrial phase (in areas of suitable newt habitat only). Whilst EN recommends survey of all ponds within 500m of development, level of anticipated impact of OHL construction is relatively low, allowing for reduced spatial scope of survey (to be agreed with EN/CCW).
Otters	Water course sections (including banks and adjacent habitat) within route corridor and 30m either side.	Ideally May-September (water levels less variable); need 5 dry days pre-survey for field signs	Walkover survey to identify otter holts and field signs (spraints & footprints, couches), and habitat with potential for otters.	Disturbance of otters with young or at rest during construction phase. Will seek to avoid working within 30m of an otter holt or couch, and obtain an appropriate licence where this is unavoidable. Disturbance of otter movements during construction phase: Prohibition of night working to minimise disturbance.
Reptiles				Temporary disturbance during construction phase not considered significant, therefore no survey required.
Water Voles	Watercourse s. ponds and ditches within route corridor plus 30m either side	April-Sept	Survey for field signs around ponds, ditches, watercourses in accordance with Water Vole Conservation Handbook method (revised 2003).	Damage to habitat due to creation of temporary crossings of minor watercourses/ditches where existing crossings cannot be used.

Appendix D: Proposed Scope of Cultural Heritage Impact Assessment

Consultations

In May/June 2004 Borough Councils and other agencies in the area were contacted, given details of the project and requested to provide baseline data which would assist in the identification of route options. This request for information was based on a broad study area.

The following organisations have provided information relating to cultural heritage for the wider study area as summarised below:-

Wrexham CBC:	Archaeological sites
Shropshire CC:	Listed buildings; Historic Landscape Character types (draft)
Oswestry BC:	Extracts from Local Plan and SCC Environmental Constraints Map
North Shropshire DC:	Sites of Archaeological Importance (map)
English Heritage:	Scheduled Monuments
Cadw:	Scheduled Monuments
RCAHMW:	Printout from NMR of Wales
CPAT:	Archaeological sites.
National Trust:	Plans showing extent of Erddig & Chirk estates and inalienable land.

Existing heritage resources

Cultural heritage information provided by the above and used in the route selection process is included within the Consultation Document, Section 4: Environmental Inventory.

Archaeological Contractors

Following consultations with Wrexham CBC Archaeological Officer (Karina Kucharski) and Shropshire CC SMR Officer (Penny Ward), Oxford Archaeology, an IFA registered practice, has been appointed to undertake the cultural heritage assessment. (OANorth is included on Wrexham CBC list of archaeological contractors operating in the Wrexham area; Shropshire CC do not operate a select list, but stipulate that contractors should be IFA registered).

PROPOSED SCOPE OF WORKS

Archaeological and cultural heritage assessment will involve desk-based assessment and field assessment of the baseline conditions. The results of both methods of study will be integrated into a report that details the known archaeological and cultural heritage sites within the study corridor. The potential for unknown sites is also to be assessed. The report will indicate the relative significance of any archaeology present, degrees of site sensitivity to the development and recommendations for mitigation and monitoring measures during the course of the project.

The archaeological assessment methodology will involve consultation with Wrexham and Shropshire County Archaeologists. The details of the method will be finalised through consultation with all relevant interested parties and will result in a written scheme of investigation.

The possible effects on the archaeology and cultural heritage considered to be relevant are:

- construction effects resulting in direct loss, including unobserved loss from ground disturbance;
- post-construction visual effects on the setting of the monument or site.

In considering these potential impacts, the following features will be considered:

- statutorily designated sites;
- non-statutorily designated sites;
- unrecorded sites identified through field assessment

- archaeologically important hedgerows (identified in accordance with the Hedgerows Regulations 1997).

Baseline information

The following will be considered:

- All statutorily designated sites (Scheduled Monuments, listed buildings and conservation areas, registered historic parks and gardens)
- Non-statutorily designated sites
- archaeologically important hedgerows (identified in accordance with the Hedgerows Regulations 1997).

Assessment Criteria and Method

Desk based assessment will be undertaken for a 1km wide corridor along the preferred route in order to establish the baseline environment.

Field assessment will seek to clarify the character, location and extent of known archaeological sites and identify unknown sites through field assessment. A 100m wide corridor will be systematically walked by a team of professional archaeologists to identify archaeological sites. This comprises an 80m corridor within which poles may be positioned, plus 10m either side to allow for stays and access tracks. In areas where significant sites are known to be present within the corridor, a wider corridor may be walked to collect sufficient information for developing mitigation measures. Where sites are identified they will be recorded by a combination of written record, using pro-forma site recording sheets, and where appropriate photographically.

Assessing archaeological importance

Some SMRs contain an assessment of importance/significance of sites. Where these are available they will form the basis for impact assessment. Where prior assessment is absent, importance would be assessed through the exercise of professional judgement in relation to the criteria applicable to Scheduled Monuments, namely:

- survival/condition
- period
- group value
- rarity
- situation
- multiperiod/single period status
- fragility/vulnerability
- documentation.

Importance	Examples of receptor
International and National	World Heritage Site, Sites of International importance Scheduled Monuments (SMs), Grade I and II* Listed Buildings, Sites of National importance
Regional/County	Conservation Areas, Registered Parks and Gardens (Statutory Designated Sites), Grade II Listed Buildings, Sites of Regional/County importance Sites and Monuments Record/Historic Environment Record
Local/Borough	Sites with a local or borough interest Sites with a borough value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade

Importance	Examples of receptor
Low local	Sites with a local or parish interest Sites with a low local value or interest for education or cultural appreciation Sites that are so badly damaged that too little remains to justify inclusion into a higher grade
Negligible	Sites or features with no significant value or interest. Sites which are so badly damaged that too little remains to justify inclusion into a higher grade.

Table 1: Criteria used to determine Importance of Receptors

The sensitivity of the archaeological resource will depend upon factors such as the condition of the site and the perceived heritage value/importance of the site.

Assessment of effects and identification of potential impacts

The **nature of effects** will be assessed for the proposed development, with the main types of potential significant impact on sites of archaeological interest being:

- direct impact: physical damage, generally irreversible, to recorded sites and the unknown resource;
- indirect: visual intrusion on archaeological and cultural heritage sites or features, or landscape change affecting their setting. The assessment of effects on setting requires an understanding of the function of the site and its current cultural importance.

The predicted **magnitude of effects** will be assessed as follows:

Scale of Impact	Description
Substantial	Significant change in environmental factors; Complete destruction of the site or feature. Change to the site or feature resulting in a fundamental change in ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting, or causing statutory objectives to be exceeded
Moderate	Significant change in environmental factors; Change to the site or feature resulting in an appreciable change in ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting
Slight	Change to the site or feature resulting in a small change in our ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting
Negligible	Negligible change or no material changes to the site or feature. No real change in our ability to understand and appreciate the resource and its cultural heritage or archaeological value/historical context and setting

Table 2: Criteria used to determine Scale/Magnitude of Impact

Significance of potential impacts

The significance of potential impacts will be assessed by taking into account the sensitivity of the archaeology or built heritage and the magnitude and nature of the potential impact upon this resource.

The interaction of the scale of impact (Table 2) and the importance of the receptor (Table 1) produces the impact significance (Table 3). This is calculated by using the matrix table as shown below:

Resource Value (Importance)	Scale of Impact Upon Receptor		
	Substantial	Moderate	Negligible
International	Major	Major	Minor
National	Major	Major	Minor
Regional/County	Major	Major/ Intermediate	Minor/Neutral
Local/Borough	Intermediate	Intermediate	Minor/Neutral
Local (low)	Intermediate-Minor	Minor	Neutral
Negligible	Neutral	Neutral	Neutral

Table 3: Impact Significance Matrix

The effects are categorised according to the established seven-point scale and terminology of Major, Intermediate and Minor Beneficial and Adverse and Neutral effects set out below (Table 4):

Nature of Impact
Major beneficial (positive) effect
Intermediate beneficial (positive) effect
Minor beneficial (positive) effect
Neutral effect
Minor adverse (negative) effect
Intermediate adverse (negative) effect
Major adverse (negative) effect

Table 4: Impact Significance Category

The impact significance category for each identified receptor or feature will also be qualified, and recommended mitigation measures will be provided, where possible at this stage, to impacts that are of moderate significance or above. Any measures to reduce any impact will be promoted in the report. It is also normal practice to state that impacts above moderate significance are regarded as significant impacts. It is very important that the residual impact assessment takes into consideration the ability of the mitigation to reduce the impact, its likely success and the developer's commitment to this.

It is considered important to attribute a level of confidence by which the predicted impact has been assessed. For the purpose of this assessment, the criteria for these definitions are set out in the table below.

Confidence Level	Description
High	The predicted impact is either certain, ie a direct impact, or believed to be very likely to occur, based on reliable information or previous experience.
Low	The predicted impact and its levels are best estimates, generally derived from the experience of the assessor. More information

	may be needed to improve the level of confidence.
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Table 5: Impact Prediction Confidence

Mitigation

Where avoidance of effects is not possible, recommendations will be made for measures to reduce or remedy significant adverse impacts. In archaeological terms, the mitigation aims to avoid, lessen or repair an impact or adverse effect on the archaeological resource. Options for mitigating effects include preservation *in situ*, investigation to preserve by record, enhancement.

The mitigation strategy will include a series of principal archaeological objectives to mitigate all identified significant effects of the proposed development. The best option is to preserve any significant resource *in situ* where possible. Where this is not possible or desirable and alternative options exist they will be discussed and recommendations made as to the most appropriate approach.

Archive

The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Archaeological Projects*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the HER (the index to the archive and a copy of the report).

Appendix E: Proposed scope of landscape and visual impact assessment and suggested viewpoints

Landscape Assessment Method

Landscape effects are the outcome of physical changes to the fabric of the landscape arising from the development, such as the addition, removal or alteration of structures, trees or woodlands and forests, which may alter the character and the perceived quality of the area affected.

Landscape impact assessment considers these effects on the integrity and character of the landscape as a whole. It considers both the individual components of the landscape and the overall structure and coherence of the landscapes affected.

The landscape impact assessment methodology will be in accordance with the Guidelines for Landscape and Visual Assessment published by the Landscape Institute with the Institute of Environmental Management and Assessment (2nd Edition, 2002).

Possible effects on the landscape considered to be relevant are:

- physical changes to landscape elements (such as removal of a group of trees);
- changes to the composition of elements that may disrupt a distinctive local pattern
- introduction of man-made elements into a landscape perceived as wild or untouched
- effects on designated landscapes.

Baseline information

An inventory of designated and valued landscapes and an identification of areas of differing landscape character within the study area will be compiled from published assessments, and the landscape character assessment validated and refined where appropriate by site visits.

The preferred route corridor does not affect any nationally designated areas of landscape value.

Areas of regional or local importance, such as Areas of Great Landscape Value are designated by the relevant local authority to safeguard locally important areas of scenic quality from inappropriate development. The route corridor affects an Area of Special Landscape Character (Oswestry BC) and two Special Landscape Areas (Wrexham CBC).

In the planning system, the effect of proposed development upon a site on the current registers of historic parks and gardens, compiled by English Heritage and Cadw/CCW/ICOMOS, is a material consideration. The preferred route corridor is within the vicinity of four Registered Historic Parks and Gardens: Erddig, Wynnstay, Brynkinalt and Pen-y-lan.

Where the landscape is not designated, impact assessment will relate to areas of landscape character defined in published assessments (Wrexham CBC and Shropshire CC).

An evaluation will be made of the importance or value of elements and character, the condition or quality of the landscape and also its capacity to accommodate change without significant effects upon its character.

Landscape value assessment is concerned with the relative value that is attached to different landscapes. In a policy context the usual basis for recognising certain highly valued landscapes is through the application of local or national designations. In non-designated landscapes the aim is to reflect the value of the landscape at a specific scale, identify the receptors to which it is important, and why the landscape is important to them.

Landscape condition (or quality) is a factual description of the physical state of the landscape, and about its intactness, from visual and functional perspectives, also with reference to ecology.

Landscape sensitivity refers to the degree to which it can accommodate change without detrimental effects on its character. This sensitivity varies with:

- Existing land use;
- The pattern and scale of the landscape;
- Visual enclosure/openness of views, and distribution of visual receptors;
- The scope for mitigation, which would be in character with the existing landscape;
- The value placed on the landscape.

Assessment of impact: a) magnitude of effects

Impact assessment describes the likely nature and scale of changes to landscape elements and characteristics and consequential effects on landscape character resulting from the proposed development. A distinction is made between the scale of effect (e.g. large/medium/small); its nature (adverse or beneficial; negative or positive); and its duration (short, medium, long-term/permanent or temporary). More weight is usually given to effects that are greater in scale and permanent or long-term. In assessing the duration of the effect, consideration is given to the effectiveness of mitigation, particularly where planting is proposed for screening purposes.

Table 1: Criteria for Assessment of Magnitude of Effects

Magnitude of Effect	Typical criteria
High	Total loss of or major alteration to key elements/features/ characteristics of the baseline i.e. pre-development landscape or view and/or introduction of elements considered to be totally uncharacteristic when set within the attributes of the receiving landscape.
Medium	Partial loss of or alteration to one or more key elements/features/ characteristics of the baseline landscape or view and /or introduction of elements that may be prominent but may not necessarily be considered to be substantially uncharacteristic when set within the attributes of the receiving landscape.
Low	Minor loss of or alteration to one or more key elements/features/ characteristics of the baseline landscape or view and/or introduction of elements that may not be uncharacteristic when set within the attributes of the receiving landscape.
Negligible	Very minor loss or alteration to one or more key elements/features/ characteristics of the baseline landscape or view and/or introduction of elements that are not uncharacteristic with the surrounding landscape – approximating to the 'no change' situation.

(Source: LI/IEMA 2002, p145)

b) Significance of landscape effects

Having identified the effects, the significance of these effects is evaluated. Significance is not related to an absolute scale but is a judgement according to criteria defined in terms of each development and its location. The two principal considerations in determining significance are the scale or magnitude of effect and the sensitivity of the location or receptor.

The significance of landscape effects has been judged according to the criteria outlined below in Table2:

Table2: Guidance on Significance of Landscape Effects

Significance	Definition
Severe adverse	The proposed scheme would result in effects that: Are at a complete variance with the landform, scale and pattern of the landscape; Would permanently degrade, diminish or destroy the integrity of valued characteristic features, elements and/or their setting; Would cause a very high quality landscape to be permanently changed and its quality diminished.
Major adverse	The proposed scheme would result in effects that: Cannot be fully mitigated and may cumulatively amount to a severe adverse effect; Are at a considerable variance to the landscape degrading the integrity of the landscape; Will be substantially damaging to a high quality landscape.
Moderate adverse	The proposed scheme would: Be out of scale with the landscape or at odds with the local pattern and landform; Leave an adverse impact on a landscape of recognised quality.
Minor adverse	The proposed scheme would: Not quite fit into the landform and scale of the landscape; Affect an area of recognised landscape character.
Neutral	The proposed scheme would: Complement the scale, landform and pattern of the landscape; Maintain existing landscape quality.
Minor beneficial	The proposed scheme has the potential to: Improve the landscape quality and character; Fit in with the scale, landform and pattern of the landscape; Enable the restoration of valued characteristic features partially lost through other land uses.
Moderate beneficial	The proposed scheme would have the potential to: Fit very well with the landscape character; Improve the quality of the landscape through removal of damage caused by existing land uses.

(Source: LI/IEMA 2002, p140)

Visual Impact Assessment Method

The visual impact assessment methodology will be in accordance with the Guidelines for Landscape and Visual Assessment published by the Landscape Institute with the Institute of Environmental Management and Assessment (2nd Edition, 2002).

Baseline information

The first stage in visual impact assessment is to establish the extent and nature of existing views of the proposed route corridor from principal representative viewpoints, and the nature and character of the visual amenity of the potentially sensitive visual receptors (or viewers). This involves defining the zone of visual influence, which is the area approximately from which it is estimated that the overhead line will be visible. This is undertaken initially through analysis of topography, followed by field survey to verify the extent of potential visibility, identify features which might screen views, and to identify potential visual receptors.

Field survey work for the visual assessment is carried out at the same time as the landscape assessment. No access to properties is sought and the assessment is

therefore based on a best assumption from publicly accessible locations outside or close to properties.

Visual receptors

An analysis of the importance and sensitivity of visual receptors forms part of the baseline information for visual assessment.

Visual receptors include:

- Users of recreational landscapes/public footpaths and bridleways including tourists and visitors;
- Residents;
- Users of public sports grounds and amenity open space;
- Users of public roads, railways, canals;
- Workers (in their workplace).

Views of and from within valued landscapes are also considered to be visual receptors (LI/IEMA, 2002).

Valued landscapes: designations

There are two levels of designation designed to protect areas of recognised high quality landscape or scenic value in England and Wales: national and regional/local. There are no National Parks or Areas of Outstanding Natural Beauty within the study area. Areas of regional or local importance, such as Areas of Great Landscape Value are designated by the relevant local authority. The route corridor affects an Area of Special Landscape Character (Oswestry BC) and two Special Landscape Areas (Wrexham CBC).

In the planning system, the effect of proposed development upon a site on the current registers of historic parks and gardens, compiled by English Heritage and Cadw/CCW/ICOMOS, is a material consideration. The preferred route corridor is within the vicinity of four Registered Historic Parks and Gardens: Erddig, Wynnstay, Brynkinalt and Pen-y-lan.

Sensitivity

Sensitivity of visual receptors depends upon location of viewpoint, expectations and activity of the receptor and the importance of the view (its appearance in guidebooks, on tourist maps, in facilities provided for its enjoyment and references to it in literature or art).

Guidance indicates that the most sensitive receptors may include:

- Users of all outdoor recreational facilities including public rights of way, whose attention or interest may be focused on the landscape;
- Communities where the development results in changes in the landscape setting or valued views enjoyed by the community;
- Occupiers of residential properties with views affected by the development.

In this process, lower storey views from residential properties are generally more sensitive than upper storey views, as these are the rooms in which residents spend more time experiencing the view. (This is not universally the case as some residences have living rooms on upper storeys.)

Most land use planning regimes consider that public views are of greater value than views from private property.

Selection of viewpoints

Viewpoints for detailed visual assessment will be selected deliberately to give a representative sample of the following:

- a balance of viewpoints from either side of the line;
- a proportion close to the proposed line (where poles are in the foreground and middle-ground of the view)
- a similar proportion further from the proposed line (where poles are in the middle-ground or background of the view)
- views from residential areas must be considered
- views from identified recreational resources within the zone of visual influence
- important historical or cultural sites must be identified and the effects on their setting considered.

Areas where a greater number of viewers may be present (e.g. main roads, edges to built-up areas) will also inform the selection of viewpoint locations.

A preliminary list of viewpoints is proposed at the end of this document. The locations will be discussed and confirmed with the relevant authorities (local planning authorities, Natural England and CCW) prior to assessment.

Photomontage illustrations

For a selection of the above viewpoints, photomontages will be created to illustrate the proposals, and to aid understanding of anticipated visibility effects by readers of the environmental statement.

Assessment of impact

Assessment of impact involves identification of the nature of the change in view, in terms of:

- Extent of view
- Proportion of development visible
- Distance
- Whether views are transient or one of a sequence of views.

The analysis should also define the scale or magnitude of visual effects by considering:

- Scale of change of view (proportion occupied by development)
- Degree of contrast or integration
- Duration/nature
- Angle of view
- Distance
- Extent of area over which changes are visible.

Magnitude of effect has been evaluated using the same criteria for assessment presented in Table 1 of this appendix.

Distance or proximity is a very important factor when viewing a distribution line in the landscape and has a bearing on the assessment of magnitude of change. The apparent height of a wood pole line in the landscape varies inversely with the distance from the viewer.

At a distance of 2km, a 13m high structure has an apparent height of 6.5mm and it generally appears to merge into the background. Experience indicates that the most significant views of a wood pole line are likely to be experienced within a distance of 1km. However, longer distance views may also be of significance, particularly where a distribution line is viewed above the horizon – i.e. on the skyline. In many instances, topographic features will limit the overall visibility of a distribution line. The principle of intervisibility can be used to assess overall visibility, whereby points visible from the proposed pole location will also have views back to the proposed pole.

Significance of visual effects

The significance of visual impacts is a function of the nature, scale/magnitude of effect and the sensitivity of the receptor. In establishing a judgement, general guidance given in LI/IEMA 2002 has been adopted as follows:

- Large-scale changes which introduce new, discordant or intrusive elements into the view are more likely to be significant than small changes or changes involving features already present in the view.
- Changes in views from recognised and important viewpoints or amenity routes are likely to be more significant than changes affecting other less important paths and roads.
- Changes affecting large numbers of people are generally more significant than those affecting a relatively small group of users. However, in wilderness landscapes the sensitivity of the people who use these areas may be very high and this will be reflected in the significance of the change.

Significance of impacts has been considered in the context of the following comparative scale:

- An impact of high significance is generally recorded where a large magnitude of change occurs to a sensitive receptor. In this instance, this would be where the new development would appear clearly in a view which at present has the open land as a large part of its view.
- An impact of moderate significance is generally recorded where a medium magnitude of change is experienced by a receptor of high or moderate sensitivity. In this instance, this would be where parts of the development would be visible in a view but the new development would not comprise a large part of the view.
- An impact of low significance generally relates to a low magnitude of effect and often relates to a change in a distant view or one which is already screened to a large extent.

Mitigation

Mitigation is embodied in the detailed design of the proposed route. In selected locations the management of existing vegetation or the planting of new trees, shrubs and hedgerows may be proposed to mitigate adverse visual effects.

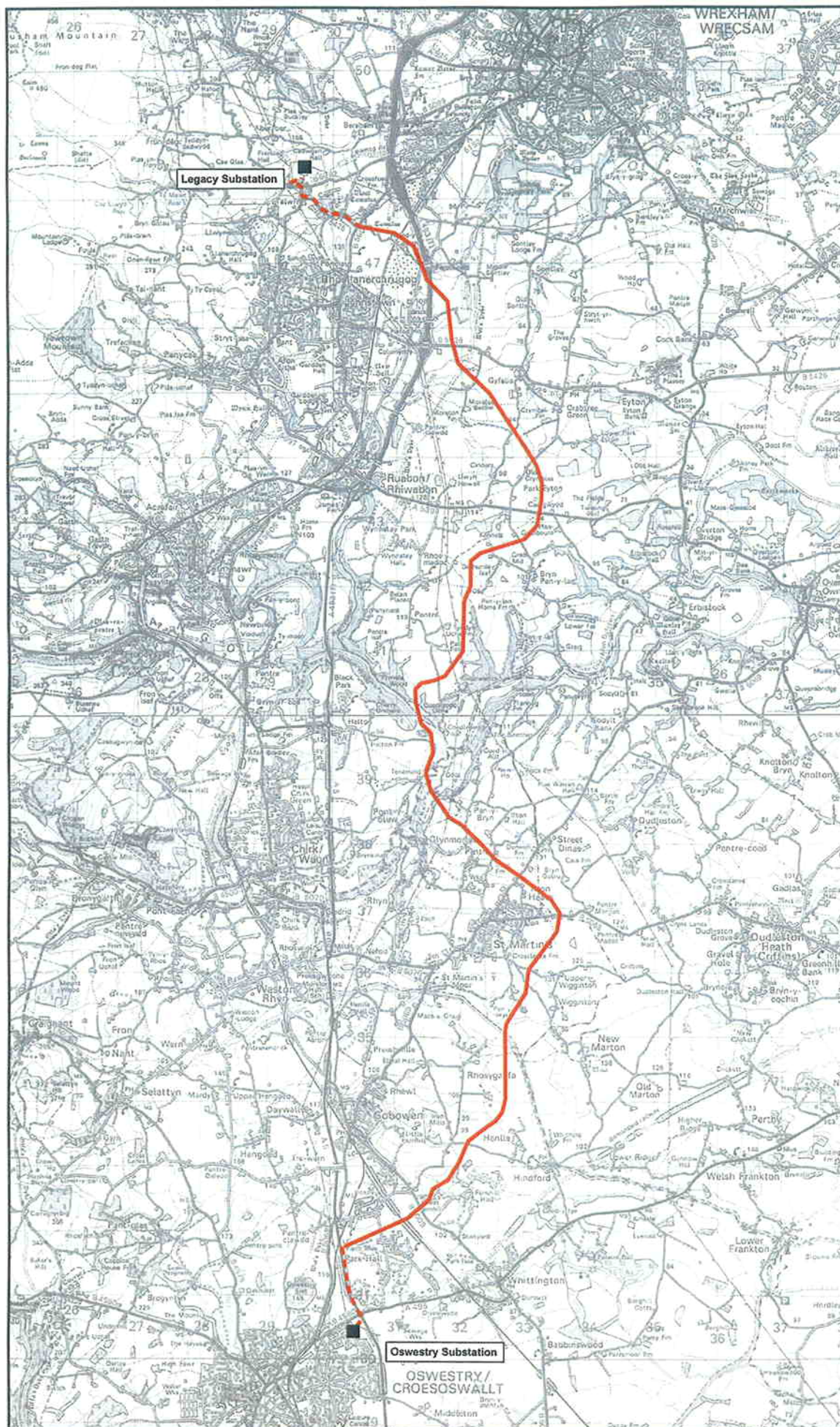
Preliminary list of viewpoints *(to be discussed with Natural England, CCW and Local Planning Authorities)*

Proposed Route: Preliminary list of viewpoints for visual impact assessment

Ref.	Description/location	Reason for selection	Distance from centre line	West or east of line?
1	View from Wrexham Road (B5605), Pentre Bychan, looking east towards Hafod community woodland	Start of OHL	On	W
2	Hafod-y-bwch, Corkscrew Lane, looking N (towards Bersham tip)	Adjacent Hafod community woodland, publicly accessible SAC site	100m	W
3	Road bridge over A483(T) near Ty Coch Farm, looking S	Elevated viewpoint	100m	E
4	View from Open Farm, Hafod-y-bwch (near Middle Sontley) looking W	Visitor facility/recreational resource	400m	E
5	View from B5426 near Eddisbury Grange, looking E		200m	W
6	View from adjacent The Crimbles, between Crabtree Green and Park Eyton, looking SW	Property close to route	100m	E
7	A539, near Park Eyton Lodge, looking E (possibly also from Bryn House, listed building?)	Listed building, edge of Wynnstay Park registered parkland	400m	W
8	View from edge of Pen-y-lan hamlet, looking NW towards Crab Mill	Edge of settlement	600m	E
9	Crab Row Cottages, Pen-y-lan, looking NW towards Dininlle Cottages	Properties	200m	E
10	Park Farm entrance, Pentre (N of River Dee) looking E (possibly no view of proposed line?)	View incorporates 2 other power lines	475m	W
11	Forge Farm, Pont-y-Blew, looking E over River Ceiriog valley	Locally designated landscape	400m	W
12	Pont Llygoden (road bridge) over River Ceiriog, looking N	Locally designated landscape	100m	E
13	View from Tenement hamlet, Ceiriog valley, looking NE	Properties and Locally designated landscape	100m	W
14	View from Maelor Way, E of Bramble Wood, looking E	Recreational route	300m	W
15	Pen-y-bryn (near Kennels) looking W	Listed building	325m	E
16	Footpath adjacent The Malt House, looking SE	Property close to route	70m	E
17	Ifton Heath to Street Dinas road, N of Gilrhos, looking N	Property close to route	70m	W
18	Footpath N of Mount Bradford Lane, St Martin's, looking NE	Edge of St Martin's settlement	200m	W
19	Ellesmere Road fishing pond, near Oakfield Farm, looking E	Edge of St Martin's settlement	150m	W
20	Pentre Morgan, looking W along Ellesmere Road	Listed building	450m	E
21	Footpath/lane intersection, E of Wigginton Farm, looking W	Public rights of way	120m	E
22	Shropshire Union Canal towpath S of Pen-y-bryn, looking E	Recreational route	260m	W

Ref.	Description/location	Reason for selection	Distance from centre line	West or east of line?
23	New Marton Bridge/Lock, Shropshire Union Canal, looking NW	Recreational route; listed building (lock)	180m	E
24	Intersection of footpaths south of Top House Farm, Rhosygadfa, looking SE	Public rights of way	130m	W
25	View from road bridge over River Perry, near Fernhill Pastures SSSI, looking SW	Signed cycle route	200m	W
26	PROW adjacent Henlle, looking W	Elevated right of way	500m	E
27	View from lane north of Fernhill Pastures SSSI, looking S	Designated nature conservation site, adjacent route	On	On line
28	From Whittington Road (B5009), Gobowen, near Oak Mill, looking NE	Signed cycle route; elevated viewpoint	400m	W
29	On B5009 at entrance drive to Great Fernhill, looking SW	Listed building	100m	W
30	Footpath from North Drive, Park Hall, looking S	Public footpath	40m	W
31	View from B5069 south of Five Crosses roundabout (with A5), looking SE	Transfer point of OHL to cable	250m	W
32	View from Old Oswestry Fort, looking NE	Scheduled Monument; elevated viewpoint	800m	W
33	View from Hafod Community Park (Johnstown Newt Sites SAC)	Recreational site		W
34	View from PROW along Wat's Dyke Scheduled Monument, near Clwt, SE of the A483(T)/B5426 junction.	Linear Scheduled Monument, Public footpath, crossed by proposed route		To be determined

Viewpoints 33 and 34 suggested by Wrexham CBC 20.11.07.



Key

Proposed Route

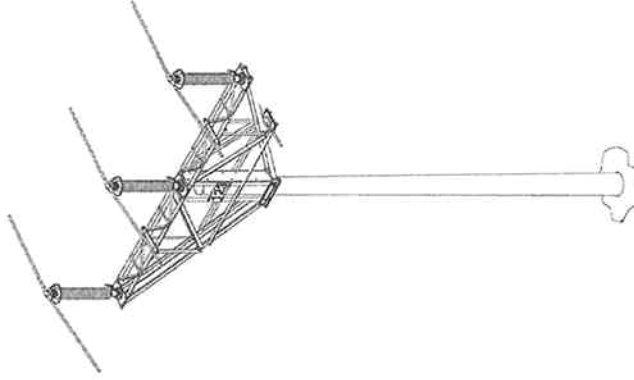
- 132 kV Wood Pole Line
- 132 kV Underground cable



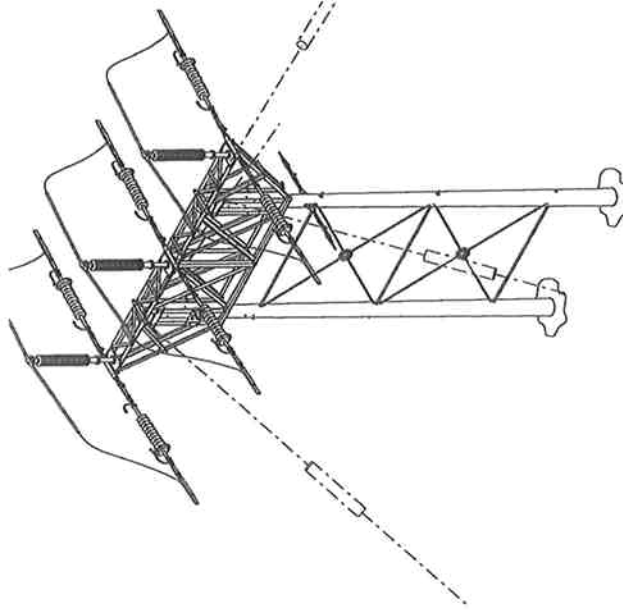
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Project:	Legacy to Oswestry 132kV Overhead Line
Figure No:	1
Drawing Title:	Proposed Route
Scale:	0 0.5 1 1.5 km

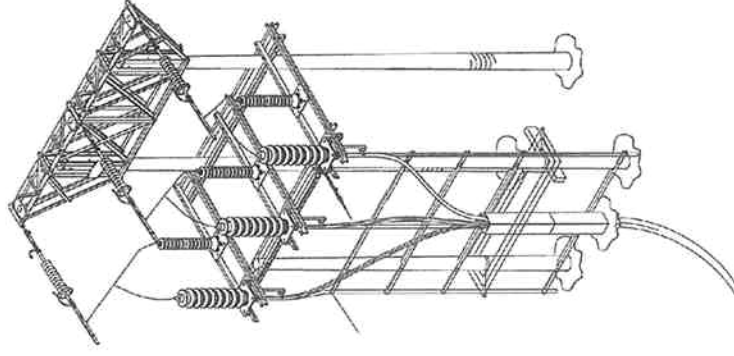
Single Pole



H Pole



Terminal Structure



SP Mainweb	
Project:	Legacy to Oswestry 132kV Overhead Line
Figure No:	2
Drawing Title:	Scoping Report: Proposed Support Types
Scale:	Not to Scale