PROPOSED REINFORCEMENT TO THE ELECTRICAL DISTRIBUTION SYSTEM

132kV Overhead Line Between Legacy and Oswestry

Environmental Statement Volume 1



SP MANWEB

April 2009

PROPOSED REINFORCEMENT TO THE ELECTRICAL DISTRIBUTION SYSTEM

132kV OVERHEAD LINE BETWEEN LEGACY AND OSWESTRY

ENVIRONMENTAL STATEMENT

April 2009

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Preface

An Environmental Statement has been prepared, on belhalf of ScottishPower Manweb, in support of an application for a 132kV overhead line reinforcement to the distribution network between Legacy (Wrexham) and Oswestry.

The Environmental Statement comprises the following documents:

- Non-Technical Summary
- The Environmental Statement (Volume 1)
- The Environmental Statement: Figures (Volume 2)
- Technical Appendices (Volumes 3 and 4)
- Confidential Technical Appendices: Protected Species (Volume 5).

Further copies of all these reports may be obtained from:

SP Energy Networks
Environmental Planning
3 Prenton Way
Prenton
Merseyside
CH43 3ET
Tel: 0151 609 2568

Copies of the Environmental Statement may be obtained from SP Manweb (tel: 0151 609 2568) at a charge of £150 hard copy and £10 on DVD. Copies of the Non-Technical Summary are available free of charge.
Copies of the documents will be available for public viewing at the following locations:

Council Offices

Wrexham Planning Offices
Lambpit Street
Wrexham

Shropshire Planning Offices
Development Services
Shirehall, Abbey Foregate
Shrewsbury

Oswestry Planning Offices
Castle View
Oswestry

North Shropshire Planning Offices
Edinburgh House, New Street
Wem

Libraries

Wrexham Library
Rhosddu Road
Wrexham

Rhosllannerchrugog Library
Princess Road
Rhos

Ellesmere Library
Fullwood House
Victoria Street
Ellesmere

Chirk Library
Chapel Lane
Chirk

Overton Library
Cocoa Rooms
Pen Y Llan Street
Overton

Gobowen Library
St Martin's Road
Gobowenn

Ruabon Library
High Street
Ruabon

Oswestry Library
Arthur Street
Oswestry

Other Locations

St Martin's Centre
Overton Road
St Martin's

*Any representations to the application should be made by post to the **Department of Energy and Climate Change**, Energy Development Unit, Energy Group, Bay 2123, 1 Victoria Street, London SW1H 0ET, identifying the proposal and specifying the grounds for representation.*

Representations should be dated and should clearly state the name (in block capitals) and full return email or postal address of those making representation. All representations to the Government will be copied in full to the planning authority, and made available to the public on request, unless individuals request otherwise.

Introduction

0.1 This Non-Technical Summary forms part of the Environmental Statement (ES) prepared under The Electricity Works (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2007 on behalf of ScottishPower Manweb (SP Manweb).

0.2 SP Manweb is the licensed Distribution Network Operator for an area covering Cheshire, North and Mid-Wales and parts of Merseyside. It is required under the Electricity Act 1989 and under the terms of its Electricity Supply Licence 'to develop and maintain an efficient, co-ordinated and economical system of electricity supply'.

0.3 The ES has been prepared in support of an application under Section 37 of the Electricity Act 1989 for a 132kV overhead line reinforcement of the distribution network between Legacy (Wrexham) substation and Oswestry substation. This application under Section 37 is made direct to the Minister for Energy and Climate Change, rather than the local planning authorities. However the Minister consults with local planning authorities when considering the application.

0.4 The Section 37 application includes a request that deemed planning permission is granted for the overhead line in accordance with Section 90(2) of the Town & Country Planning Act 1990.

0.5 The proposed route is shown on Figure NTS 1: The Proposed Route.

0.6 The ES sets out the background to how the route was chosen, the relevant planning policies and other issues. It presents details of the proposed connection and the results of specific studies undertaken to assess the likely significant environmental effects of the proposal.

0.7 The reinforcement is required to ensure SP Manweb complies with its statutory duties to develop and maintain an efficient, co-ordinated and economical system of electricity supply, and to secure supplies to 80,000 customers in the area south of Wrexham.

0.8 In identifying the proposed route, SP Manweb has sought to combine sensitive routeing with appropriate mitigation measures. The measures would be taken to avoid or reduce environmental effects. SP Manweb has consulted frequently with relevant local, regional and national bodies. Project information has been made available to the public at different stages of the project so that SP Manweb could listen to and respond to public concerns regarding the proposal.

Legal and Policy Framework

0.9 The proposed overhead line will be within the boundaries of Shropshire Council (within the boundaries of the former Oswestry Borough Council and North Shropshire District Council) and Wrexham County Borough Council.

0.10 SP Manweb has accepted that Environmental Impact Assessment (EIA) is required for this overhead line and has prepared the ES to report the findings of the EIA. The process of EIA seeks to identify the 'likely significant effects' of the proposal.

Route selection, community consultation and scoping

0.11 The overhead line is needed in this area to reinforce the electricity distribution network between the substations at Legacy (Wrexham) and Oswestry.

0.12 SP Manweb holds a licence under the Electricity Act 1989. An obligation under this licence is to preserve the environment and amenity. SP Manweb has been mindful of this obligation as it designed the line and chose the route.

0.13 Extensive studies have been undertaken to identify the most suitable route and technical design for the overhead line. This has been undertaken in stages through the process of EIA to allow the balance of technical and environmental issues to be fully understood.

0.14 The routeing exercise was initially undertaken on the basis of well established rules used in the electricity industry. The process was modified to reflect the growing understanding of the specific local constraints identified through the EIA process.

Alternatives considered

0.15 A number of route alternatives for the proposed overhead line were examined before confirming a preferred route option. Different locations (substations) were considered from which the reinforcement of the network could be made. These included connections from Shrewsbury, Whitchurch, Connah's Quay, Crewe and Trawsfynydd.

0.16 In addition to alternative locations for an overhead line to reinforce the supply to areas south of Legacy, alternative methods of reinforcing the network within the area between Legacy and Oswestry were also considered. These included upgrading existing 132kV distribution lines between Legacy and Oswestry and providing the reinforcement using underground cables, rather than overhead lines.

0.17 An overhead line reinforcement of the 132kV network between Legacy and Oswestry is the most economic and environmentally acceptable solution.

0.18 Four broad options for the overhead line route were examined initially:

- East of the A483(T)/A5;
- West of the A483(T)/A5;
- Following the A483(T)/A5 road corridor; and
- Parallel to the existing 132kV overhead line between Legacy and Oswestry.

0.19 The option east of the A483(T)/A5 offered greater opportunities for assimilation of an overhead line within the landscape and had fewer constraints than other options. Further detailed route selection concentrated on this area.

0.20 The principal issues which needed to be addressed in routeing were:

- Crossing the Dee valley, steep sided and densely wooded;
- Presence of several historic parklands in the area: Erddig, Wynnstay, Brynkinalt
- Shropshire Union Canal (Llangollen branch);
- Offa's Dyke and Wat's Dyke;

- Special areas of conservation (SAC sites), internationally important wildlife sites, at Johnstown Newt Sites and the River Dee; and
- undulating terrain with plentiful mature tree cover and a dispersed settlement pattern.

.

0.21 The overhead line route was developed through a number of options to the 'Preferred Route', which represented SP Manweb's understanding of the most appropriate way to provide the reinforcement. It considered options bearing in mind its two obligations to operate an efficient and cost-effective network and to have regard to the environment and amenity.

0.22 Public consultation on the Preferred Route was undertaken in February 2007. Exhibition material and a Consultation Document were produced. The Consultation Document was issued to a wide range of consultees to seek their opinions on the proposal.

0.23 Following concerns raised during public consultation on the scheme, an alternative was identified for the southern part of the route. After a second round of consultation, the comments of those responding to the proposal were considered and the alternative was confirmed as the 'Proposed Route'.

0.24 SP Manweb asked the relevant government department for its view on the issues that should be considered within the EIA (the Scoping Opinion). Local planning authorities were consulted and gave their opinions. The EIA has been undertaken on this basis.

The proposed overhead line

0.25 Typically 132kV connections take the form of overhead lines carried on steel lattice towers of up to 26m height. A new design of overhead line, supported by wood poles of up to 16m in height, has been proposed for this reinforcement. Shorter supports result in shorter span lengths (the distance between supports). For wood pole lines of this type the average span is 80m, as compared to an average of 280m for a 132kV steel lattice tower system. It was considered that the wood pole design would be more easily assimilated within the landscape between Legacy and Oswestry which has a generous amount of mature tree cover.

0.26 Each wood pole support typically comprises two poles with steel work above supporting the insulators and 3 conductors and the earth wire. (Conductors are the wires that carry the electricity.) See Figure NTS2: Proposed Support Types.

0.27 The proposal was developed to provide a route between the substations which minimised the required length and also respected the environmental constraints as far as possible.

0.28 Space constraints at each end of the connection mean that the proposed reinforcement would be connected to the substations at Legacy and Oswestry by underground cables.

0.29 The proposed reinforcement comprises an overhead line of 20.6km length, with a total of 3km of underground cables connecting to substations. The proposed route is shown on Figure NTS1: The Proposed Route.

The route

0.30 The proposed route follows a broadly north-south alignment through Wrexham Borough and the Shropshire Council area, through the former borough of Oswestry and a small part of the former North Shropshire district, in the vicinity of St Martin's village.

0.31 The route runs from Legacy substation using underground cables for approximately 1.6km. East of Wrexham Road, it transfers to wood pole overhead line and continues in a south-easterly direction across open farmland, around the northern boundary of Johnstown Newt Sites SAC. One support pole would be sited within the boundary of Johnstown Newt Sites SAC.

0.32 The route continues in a generally south easterly direction through agricultural land, crossing Wat's Dyke (Scheduled Monument) near Gyfelia.

0.33 The route runs east of Wynnstay Park (Grade I Registered Parkland), and then takes a southerly direction through agricultural land following a clough woodland into the Dee valley. The overhead line would cross the River Dee using an existing break in the valley woodland on the north bank.

0.34 South of the River Dee, the route follows the natural contours of the valley of the River Ceiriog to Tenement, where it spans the river, and crosses an unscheduled section of Wat's Dyke at the top of the eastern valley side.

0.35 East of the valley, the route continues in a south-easterly direction around the eastern edge of St Martin's village, then follows a south-westerly alignment through the Upper Wigginton area. It crosses low-lying land around the Shropshire Union Canal to the north of New Marton Locks.

0.36 From here, the route runs in a generally south-westerly direction, to the west of the small settlements of Henlle and Hindford. The route is adjacent to Fernhill Pastures SSSI. It passes to the west of the listed building of Great Fernhill, then follows a westerly alignment towards the A5 between Oswestry Orthopaedic Hospital and Park Hall Farm Countryside Experience.

0.37 The overhead line would end adjacent the A5, and the final 1.4km connection to Oswestry substation would be made by underground cable alongside the A5.

Environmental effects

0.38 The process of EIA has been undertaken to identify the likely significant effects of the proposed overhead line. These are described in the following sections. The effects may result either from the construction of the overhead line or through its operation over the period of its life.

0.39 Through the process of the EIA, SP Manweb has sought to limit the effects of the proposed overhead line. Where likely significant environmental effects were identified, the proposal may have been amended to avoid them, or measures may have been developed to reduce or offset the effects. These actions are known as mitigation.

0.40 Much of the routeing process was undertaken to avoid potential environmental issues.

0.41 The routeing and technical solutions adopted have avoided or reduced the effects of the overhead line to such an extent that there are few residual significant effects. These are described below.

Visual effects

General visual context

0.42 The majority of the area is gently undulating farmland with a generous amount of tree cover. It is a rural landscape with few settlements, but a scattering of farmsteads and hamlets, connected by a network of narrow, often single track, winding lanes. The majority of these are bounded by tall (over 2m high) hedgerows. These are important in affecting views and visibility from the road network, as often it is only possible to appreciate the wider view through field gates. Elsewhere tree cover is important in reducing the area over which the overhead line may be visible. The 'layering effect' of numerous field boundary trees is particularly important.

0.43 There are, however, additional features of the landscape which affect visibility and opportunities for views.

0.44 Land rises to the west of the study area, to the foothills of the Clwydian Range. Whilst these are too distant to have views of the overhead line, they form a noticeable feature and elevated horizon or backdrop in many views westwards.

0.45 The steeply incised valley of the River Dee and its tributaries also influence visibility. Views within the valleys are largely enclosed, whilst the valleys themselves may be hidden from view in the wider surroundings.

0.46 In the north of the study area, the artificially elevated landforms of former colliery spoil heaps at Bersham and Hafod form features within many views and are also vantage points from which panoramic views can be obtained. To the south, the embanked ramparts of Old Oswestry hill fort offer a similar, publicly accessible viewpoint.

0.47 The chimney and associated smoke plume of the Kronospan factory at Chirk is a noticeable feature in many views. The A483/A5 trunk road passes through the area. Although the road surface is not often visible, the road lighting columns and roundabouts, the movement of vehicles and the roadside woodland strips are noticeable in views. Most people who will have views of the overhead line will be using the A483/A5(T).

0.48 The Shropshire Union Canal forms a linear feature in views from the surrounding higher ground.

0.49 The landscape is crossed by narrow winding lanes and a network of footpaths. Although relatively few people use the lanes and footpaths compared to the busy trunk road, their attention is more likely to be focussed on appreciation of the landscape and views.

Extent of visibility of the overhead line

0.50 The proposed route has been chosen to minimise effects on the landscape character and in views. An overhead line inevitably will be visible in the landscape. However the nature of the wood pole support chosen as opposed to a steel tower (pylon) line will significantly limit the scale of effects.

0.51 The majority of the proposed overhead line would be likely to be visible over relatively short distances as trees, hedges and woodlands screen views.

0.52 In some areas there would be a less screening than typically occurs in this landscape. These areas are:

- between Pentre Bychan (B5605) and the A483(T), where there are opportunities for downhill views from rising land to the west, and from the former colliery spoil heaps at Hafod and Bersham;
- in the Park Eyton area, around the A539 crossing, where the landscape is less undulating and more open;
- where the line crosses the upper, eastern slope of the Ceiriog valley in the vicinity of Bramble Wood to Pen-y-Bryn it is likely to be visible from both within the Ceiriog valley and from rising land to the west, in the vicinity of Halton, some 2kms distant, east of the A5(T);
- in the Pentre Morgan area northeast of St Martin's village, where the landscape is more open;
- within the shallow valley occupied by the Shropshire Union canal, where there are opportunities for views from higher land to the east and west, and the landscape of the valley floor is relatively open;
- around Henlle, near Hindford, the landscape is relatively elevated, flat and open; and
- in the area between Park Hall and the Orthopaedic Hospital, land is flat with a lower amount of tree cover than generally is the case, and there is rising land to the west (west of the A5(T)), including Old Oswestry fort.

Effects on views

0.53 Changes to the view have been assessed from 36 viewpoints which were agreed with the local planning authorities, likely to be the most sensitive viewpoints along the proposed route. The visual effects of the proposal would be significant in a third of the viewpoints assessed, but there would be no major adverse visual effects.

0.54 Only four of the 13 viewpoints where the visual effects are significant are at a distance greater than 250m from proposed route. As would be expected, the assessment shows that the greatest effects would occur in views close to the proposed overhead line, rather than from more distant viewpoints.

0.55 Moderate visual effects have been predicted in views from the following locations:

- the eastern edge of settlement at Pentre Bychan;
- the public footpath (Wat's Dyke Way Heritage Trail) along Wat's Dyke, near Gyfelia, where the route crosses the dyke;
- the edge of Wynnstay Park registered historic parkland;
- within the valley of the River Ceiriog, a locally designated Special Landscape Area, in the vicinity of Tenement;
- public footpaths with panoramic views over more open landscapes north of St Martin's village, west of Wigginton and south of Rhosygadfa;
- within the relatively open, shallow valley of the Shropshire Union Canal; and

0.56 The viewpoints chosen are a selection of the most sensitive viewpoints near the proposed overhead line, so visual effects experienced from other locations are likely to be less. Much of the proposed overhead line would only be seen when the viewer is relatively close, as intervening trees and hedgerows would screen views.

0.57 Overall, significant visual effects are limited in number and geographical spread.

Effects on the landscape

Landscape character

0.58 The area through which the proposed overhead line would be routed is partly the Welsh borderlands between the Clwydian Hills and the River Dee, and partly the extensive, gently rolling Shropshire plain. This is a rural landscape with fields bounded by hedgerows and abundant hedgerow trees, mostly oak, giving a well-wooded appearance.

0.59 The proposed overhead line would not affect any nationally designated areas of landscape value. Approximately 5 kilometres of the overhead line would be within an area close to the Dee valley which is designated for its local landscape value.

0.60 The overhead line would be within 1km of Erddig, Wynnstay, Pen-y-lan and Brynkinalt Registered Historic Parklands.

Effects on landscape character

0.61 The proposed overhead line would have effects of minor or moderate significance upon the locally designated areas of landscape within its immediate vicinity. The alignment has been selected to avoid effects upon the highly sensitive steeply wooded banks of the River Dee – and would have an effect of minor significance upon the character of this area.

0.62 The route does not directly affect any registered historic parks or gardens, or their essential settings, and would have no effect on the landscape character of these areas.

0.63 The proposed overhead line is likely to have an effect upon the landscape character within its immediate vicinity of minor significance for the most part.

0.64 Effects upon landscape character have been assessed as being of moderate significance at a local scale for approximately one third of the length of the proposed overhead line. Generally these are sections where the landscape is judged to have a moderate or higher sensitivity to the type of development proposed. These sections have been identified as:

- around Park Eyton;
- the upper slope on the eastern side of the Ceiriog valley;
- between St Martin's and Pentre Morgan, around the Ellesmere Road area;
- around the Shropshire Union Canal;
- within the River Perry valley; and
- the relatively open landscape between the River Perry and the A5.

0.65 The effects upon landscape character would occur in very local areas rather than over wide areas. Effects for the majority of the route will be minor, with no effects of greater than moderate significance.

Effects on ecology and nature conservation

0.66 An assessment has been undertaken of the potential effects on ecological interests (habitat, flora and fauna receptors) arising from the construction and operation of the proposed overhead line. Information was drawn from a number of sources. A range of ecological field surveys were undertaken by experienced and qualified ecologists to establish which habitats and species (focussing on protected fauna) are present within the proposed route corridor. Additional historical information on ecological interests was provided by a range of nature conservation organisations.

0.67 The proposed overhead line would pass through primarily agriculturally improved grassland subdivided by hedgerows. There are other less extensive habitats along the proposed route including broad-leaved woodland, marshy grassland, scrub and arable land. There are also numerous field ponds.

0.68 Johnstown Newt Sites SAC and the Rivers Dee and Ceiriog (part of the River Dee and Bala Lake SAC) are internationally important wildlife sites within the survey area. Two nationally important sites, Nant-y-Belan and Prynela Woods SSSI and Fernhill Pastures SSSI, are located adjacent to the route corridor. The proposed overhead line would cross Moor Wood County Wildlife Site and Bramble Wood (an area of Ancient Semi-Natural Woodland), both of county value for nature conservation.

0.69 The proposed overhead line would cross an area of lowland fen habitat, considered to be of county-national importance because of its rarity. Other habitats within the survey area were determined to be of local importance.

0.70 Fauna that have been individually assessed in the context of this development include:

- otter (of county value);
- great crested newt, farmland birds, barn owl, water vole (of district value); and
- badger, bats, brown hare and dormouse (of value in the immediate locality).

0.71 Fish species in the River Dee have not been individually assessed but are considered as part of the SAC as a whole, which is of international value.

0.72 As part of the iterative development of the proposed overhead line route, various identified ecological constraints have been taken into consideration. Designated sites and areas of more sensitive habitat have been avoided where possible.

0.73 Potentially significant effects were identified on 17 ecological receptors. These include designated sites, important habitats and fauna. Mitigation measures will be put in place to reduce these effects to non-significant levels. A 'best practice' approach will be adopted for construction works and mitigation measures will also be used in some instances where there are no significant effects.

0.74 The overhead line will have a significant effect in the short to medium term upon lowland mixed deciduous woodland (and individual trees) which comprise a habitat of local importance. It is estimated that the overhead line would affect 119 trees and an area of 1.34 hectares of woodland tree groups, although some of these would require lopping or reducing in height, rather than felling. In the medium to

long term, replacement woodland planting will mature and the effect will be reduced to a non-significant level. If it does not prove possible to undertake replacement planting, the long term effect would remain significant, but at a local scale. SP Manweb would make a contribution to an appropriate local wildlife trust to compensate for this loss.

0.75 The proposed mitigation measures will ensure that the construction and operation of the proposed overhead line will have no significant effect on any other sensitive habitats or fauna.

Effects on archaeology and cultural heritage

0.76 The archaeology assessment considers the likely effects of the construction and operation of the proposed route on cultural heritage assets, including archaeological sites, historic buildings, registered historic parklands and historic landscapes. Archaeological desk-based assessment, consultation and field survey were undertaken to identify those cultural heritage assets that might be affected by the proposed development. The potential for the ground beneath the proposed overhead line and underground cables to contain buried and as yet undetected archaeological remains was also considered

0.77 A total of 79 archaeological and cultural heritage features have been identified within a 1km corridor centred on the proposed route. In the 100m corridor within which direct effects could potentially occur, there are two Scheduled Ancient Monuments, one listed building, and four undesignated sites. In addition, the 100m corridor contains 126 historically important hedgerows. Wat's Dyke is an archaeological feature with some sections designated as Scheduled Monument. The proposed route crosses Wat's Dyke twice. One crossing is over a section which is scheduled.

0.78 Direct effects on the scheduled section of Wat's Dyke have been avoided through siting of supports as far as possible from the monument, resulting in a residual direct effect that is of minor significance. The position of the unscheduled section of the dyke in relation to topography means that siting a support pole in close proximity to the monument is likely to prove unavoidable. Mitigation measures will be put in place, including a programme of controlled archaeological excavation of any areas to be affected by support foundations. However this is likely to remain a major adverse and significant effect upon this section of Wat's Dyke.

0.79 The assessment identified five cultural heritage sites that would experience a significant effect upon the quality of their settings as a result of the proposed overhead line. These are two scheduled monuments (Wat's Dyke south of Black Brook bridge and Hafod-y-Bwch tumulus), a Grade II listed building (Bryn House), and two undesignated sites (the Shropshire Union Canal (Llangollen branch) and the unscheduled section of Wat's Dyke described previously).

0.80 A comprehensive programme of mitigation is proposed to reduce the effects on the archaeological resource, known and unknown. Implementation of such a programme will generally reduce any other potential residual effects of the scheme to minor adverse.

Effects on land management

0.81 There will be some interference with farming activities along the proposed overhead line during the construction period. Pole supports in fields are likely to cause some inconvenience to farming activities but maintenance of the overhead line would cause minimal disruption. The overall effect of the overhead line on agricultural interests along the route corridor is considered to be minor and not significant.

Effects on recreation and tourism

0.82 Careful routeing to avoid specific recreation and tourist facilities has prevented direct effects upon the majority of identified resources. Potential effects on recreation and tourism occur where the proposed overhead line crosses recreational routes including the Shropshire Union Canal, the Maelor Way and Wat's Dyke Way. In general, these effects are considered minor and therefore not significant.

Effects on mineral resources and landfill sites

0.83 The proposed overhead line would cross areas where mineral resources are protected and where consultation is required for development. An overhead line would have a very small level of effect on resources.

0.84 The proposed overhead line would have no effects upon landfill sites.

Effects on infrastructure

0.85 The proposed overhead line would have no significant effect on road, rail or canal communications or general infrastructure along the route corridor.

Effects of electro-magnetic fields on human health

0.86 It has been suggested that exposure to power-frequency magnetic fields could be linked with various health problems. SP Manweb considers that even a remote possibility of a health risk must be taken seriously and will continue to act upon the current advice of the Government and HPA in this matter. The design and operation of the overhead line is consistent with this advice and no adverse effects are anticipated.

Noise effects

0.87 Noise levels generated during construction of the wood pole line are likely to be low, and all activities which give rise to appreciable noise will be subject to the requirements of best practice in terms of both

Health and Safety Requirements and Environmental Health Requirements.

0.88 During operation of the overhead line audible-noise levels due to the line will be imperceptible at the nearest property, and not significant.

Effect on development proposals and planning policy

0.89 The proposed route would not pass through any areas allocated for development. No applications for planning permission which would be affected by the proposed line were under determination prior to submission of the application.

Control of environmental effects

0.90 SP Manweb is committed to implementing the mitigation measures contained in the Environmental Statement. An environmental management plan (EMP) will be produced to control and guide working practices as the project is built. Risk assessments and environmental audits will be undertaken. A representative of SP Manweb will be based on site during construction.

Summary

0.91 The addition of an electrical circuit between Legacy and Oswestry will provide essential reinforcement to the high voltage distribution system in the Cheshire, Merseyside, North and Mid-Wales area. SP Manweb proposes to construct a new 132kV overhead line which would be supported on wood poles.

0.92 A route for this new overhead line has been identified following detailed examination of a number of route alternatives and extensive consultation with both the public and statutory authorities.

0.93 SP Manweb is a licensed Distribution Network Operator with obligations to provide a technically feasible and economically viable reinforcement which has appropriate regard to the environment and amenity. The routeing and technical solutions adopted for this reinforcement of the 132kV network have resulted in a proposal that would give rise to only limited significant effects within localised areas. The limited number of significant effects (which cannot be avoided in a development of this nature), indicates that SP Manweb has complied with these obligations.

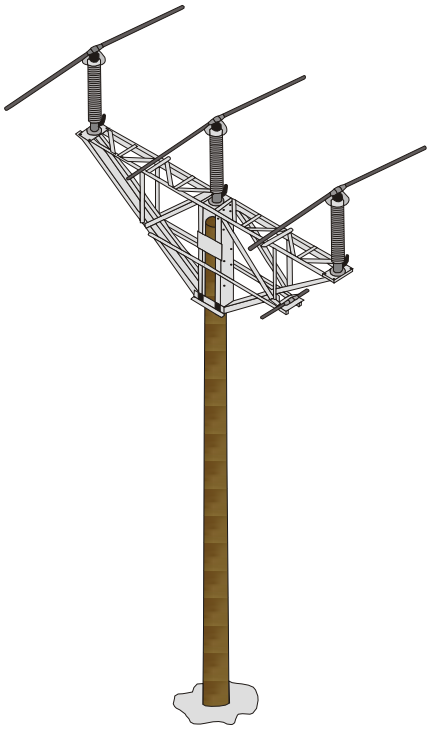


NTS1
Proposed Route

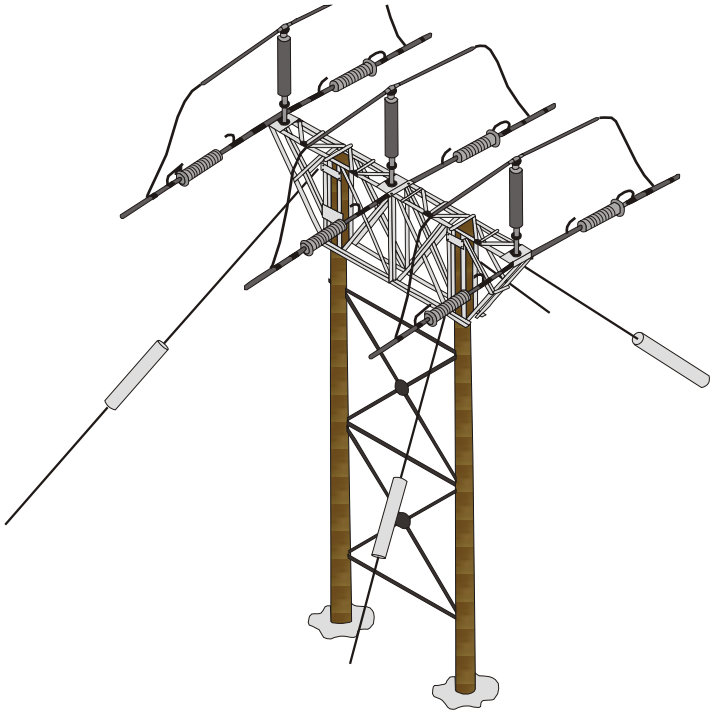
132kV Wood Pole Line
132kV Underground Cable

SP MANWEB

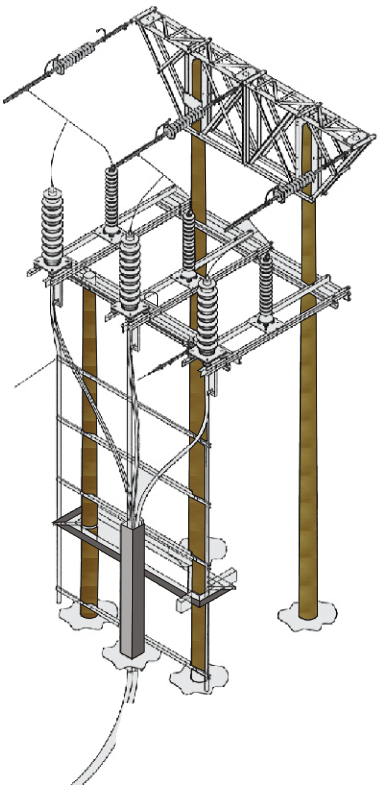
Single Pole



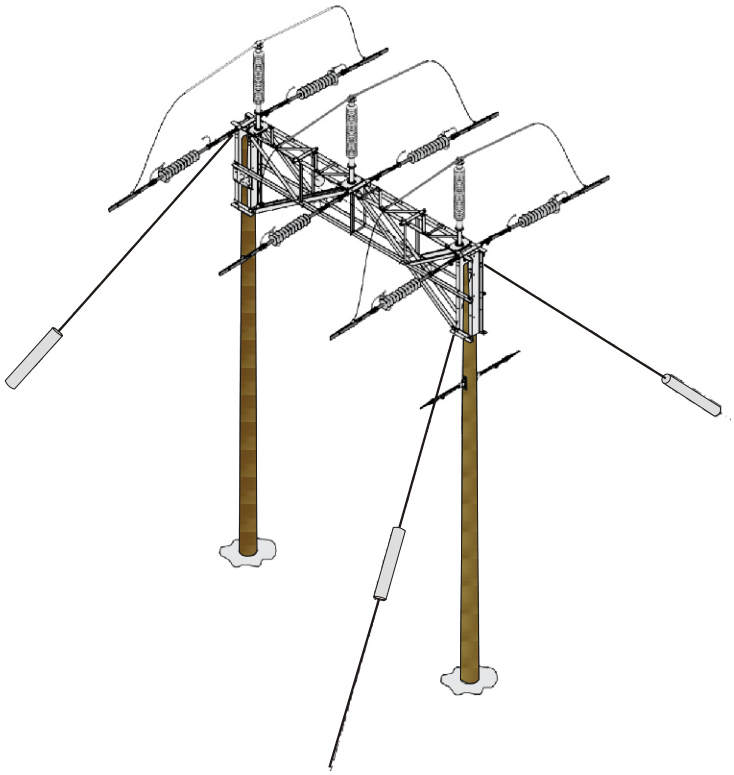
H Pole



Terminal Structure



Failure Containment Structure



NTS2

Proposed Support Types

SP MANWEB

Rhagair

Mae Datganiad Amgylcheddol wedi cael ei baratoi, ar ran ScottishPower Manweb, yn gefn i gais am atgyfnerthu'r rhwydwaith dosbarthu 132kV rhwng Legacy (Wrecsam) a Chroesoswallt.

Mae'r Datganiad Amgylcheddol yn cynnwys y dogfennau canlynol:

- Crynodeb Annhechnegol
- Y Datganiad Amgylcheddol (Rhan 1)
- Y Datganiad Amgylcheddol: Ffigurau (Rhan 2)
- Atodiadau Technegol (Rhannau 3 a 4)
- Atodiadau Technegol Cyfrinachol: Rhywogaethau a Warchodir (Rhan 5).

Gellir cael rhagor o gopïau o'r adroddiadau hyn oddi wrth:
SP Energy Networks
Environmental Planning
3 Prenton Way
Prenton
Glannau Mersi
CH43 3ET
Ffôn: 0151 609 2568

Gellir cael copïau o'r Datganiad Amgylcheddol oddi wrth SP Manweb (ffôn: 0151 609 2568) am dâl o £150 am gopi papur a £10 ar DVD. Mae copïau o'r Crynodeb Annhechnegol ar gael yn rhad ac am ddim.

Bydd copïau o'r dogfennau ar gael i'r cyhoedd eu gweld yn y mannau canlynol:

Swyddfeydd Cyngor

Swyddfeydd Cynllunio Wrecsam
Stryd y Lampint
Wrecsam

Swyddfeydd Cynllunio Swydd Amwythig
Y Gwasanaethau Datblygu
Neuadd y Sir, Abbey Foregate
Amwythig

Swyddfeydd Cynllunio Croesoswallt
Castle View
Croesoswallt

Swyddfeydd Cynllunio Gogledd Swydd Amwythig
Edinburgh House, New Street
Wem

Llyfgelloedd

Llyfrgell Wrecsam
Ffordd Rhosddu
Wrecsam

Llyfrgell Rhosllannerchrugog
Princes Road
Rhos

Llyfrgell Ellesmere
Fullwood House
Victoria Street
Ellesmere

Llyfrgell y Waun
Chapel Lane
Y Waun

Llyfrgell Owrtyn
Cocoa Rooms
Pen Y Llan Street
Owrtyn

Llyfrgell Gobowen
St Martin's Road
Gobowenn

Llyfrgell Rhiwabon
Y Stryd Fawr
Rhiwabon

Llyfrgell Croesoswallt
Arthur Street
Croesoswallt

Mannau Eraill

St Martin's Centre
Overton Road
St Martin's

*Dylai unrhyw sylwadau ynglŷn â'r cais gael eu hanfon drwy'r post at yr **Adran Ynni a Newid Hinsawdd**, Yr Uned Datblygu Ynni, Y Grŵp Ynni, Bae 2123, 1 Victoria Street, Llundain SW1H 0ET, gan enwi'r cynnig a nodi'r rhesymau am gyflwyno sylwadau.*

Dylai sylwadau gael eu dyddio a dylent ddatgan yn glir enw (mewn prif lythrennau) a chyfeiriad dychwelyd e-bost neu bost llawn y sawl sy'n gwneud y sylwadau. Bydd copi llawn o bob sylw a gyflwynir i'r llywodraeth yn cael ei anfon at yr awdurdod cynllunio, a byddant ar gael i'r cyhoedd os gwneir cais amdanynt, oni fydd unigolion yn gofyn yn wahanol.

Rhagymadrodd

0.1 Mae'r Crynodeb Annhechnegol hwn yn rhan o'r Crynodeb Amgylcheddol a baratowyd o dan Reoliadau Gwaith Trydan (Asesu Effeithiau Amgylcheddol) (Cymru a Lloegr) (Diwygio) 2007 ar ran ScottishPower Manweb (SP Manweb).

0.2 SP Manweb yw'r Gweithredwr Rhwydwaith Dosbarthu dros ardal sy'n cwmpasu Swydd Gaer, Gogledd a Chanolbarth Cymru a rhannau o Lannau Mersi. Mae'n ofynnol iddo o dan Ddeddf Trydan 1989 ac o dan delerau ei Drwydded Cyflenwi Trydan 'ddatblygu a chynnal system cyflenwi trydan effeithlon, cydgysylltiedig a diwastraff.

0.3 Cafodd y Datganiad Amgylcheddol ei baratoi yn gefn i gais o dan Adran 37 o Ddeddf Trydan 1989 am atgyfnerthu'r rhwydwaith dosbarthu 132kV rhwng is-orsaf Legacy (Wrecsam) a Chroesoswallt. Gwneir y cais hwn o dan Adran 37 yn uniongyrchol i'r Gweinidog dros Ynni a Newid Hinsawdd, yn hytrach na'r awdurdodau cynllunio lleol. Fodd bynnag, mae'r Gweinidog yn ymgynghori â'r awdurdodau cynllunio lleol wrth ystyried y cais.

0.4 Mae'r cais Adran 37 yn cynnwys cais ar i ganiatâd cynllunio tybiedig gael ei roi i'r llinell uwchben yn unol ag Adran 90(2) o Ddeddf Cynllunio Gwlad a Thref 1990.

0.5 Dangosir y llwybr arfaethedig ar Ffigur NTS 1: Y Llwybr Arfaethedig.

0.6 Mae'r Datganiad Amgylcheddol yn egluro'r cefndir o ran sut y dewiswyd y llwybr, y polisïau cynllunio perthnasol a materion eraill. Mae'n rhoi manylion y cysylltiad arfaethedig ynghyd â chanlyniadau astudiaethau penodol yr ymgymerwyd â nhw i asesu effeithiau amgylcheddol arwyddocaol tebygol y cynnig.

0.7 Mae angen yr atgyfnerthiad i sicrhau bod SP Manweb yn cydymffurfio â'i ddyletswyddau statudol i ddatblygu a chynnal system cyflenwi trydan effeithlon, cydgysylltiedig a diwastraff, ac i ddiogelu'r cyflenwad i 80,000 o gwsmeriaid yn yr ardal i'r de o Wrecsam.

0.8 Wrth bennu'r llwybr arfaethedig, mae SP Manweb wedi ceisio cyfuno sensitifrwydd o ran y llwybr a ddewiswyd gyda mesurau lliniaru priodol. Câi'r mesurau eu cymryd i osgoi neu leihau'r effeithiau amgylcheddol. Mae SP Manweb wedi ymgynghori'n aml â chyrff lleol, rhanbarthol a chenedlaethol perthnasol. Mae gwybodaeth am y prosiect wedi cael ei darparu i'r cyhoedd ar wahanol gamau o'r prosiect fel y gallai SP Manweb wrando ar bryderon y cyhoedd ynglŷn â'r cynnig ac ymateb iddynt.

Y Fframwaith Cyfreithiol a'r Fframwaith Polisi

0.9 Bydd y llinell uwchben arfaethedig o fewn ffiniau Cyngor Bwrdeistref Sirol Wrecsam, Cyngor Bwrdeistref Croesoswallt a Chyngor Dosbarth Gogledd Swydd Amwythig.

0.10 Mae SP Manweb wedi derbyn bod angen Asesiad o Effaith Amgylcheddol y llinell uwchben hon ac mae wedi paratoi Datganiad Amgylcheddol i adrodd canfyddiadau'r Asesiad. Mae'r broses Asesu Effeithiau Amgylcheddol yn ceisio nodi '*effeithiau arwyddocaol tebygol*' y cynnig.

Dewis llwybr, ymgynghori â'r gymuned a chwmpasu

0.11 Mae angen y llinell uwchben yn yr ardal hon i atgyfnerthu'r rhwydwaith dosbarthu trydan rhwng yr is-orsafoedd yn Legacy (Wrecsam) a Chroesoswallt.

0.12 Mae gan SP Manweb drwydded dan Ddeddf Trydan 1989. Un rhwymedigaeth o dan y drwydded hon yw diogelu'r amgylchedd a mwynderau. Mae SP Manweb wedi bod yn ymwybodol o'r ddyletswydd hon wrth gynllunio'r llinell a dewis y llwybr.

0.13 Ymgymerwyd ag astudiaethau helaeth i ganfod y llwybr a'r cynllun technegol mwyaf addas ar gyfer y llinell uwchben. Gwnaed hyn fesul cam drwy'r broses o Asesu Effeithiau Amgylcheddol er mwyn deall y cydbwysedd rhwng ystyriaethau technegol ac ystyriaethau amgylcheddol yn llawn.

0.14 Ymgymerwyd â'r gwaith pennu llwybr i ddechrau ar sail rheolau sydd wedi hen ennill eu plwyf yn y diwydiant trydan. Cafodd y broses ei haddasu i adlewyrchu'r ddealltwriaeth gynyddol o'r cyfyngiadau lleol penodol a nodwyd drwy'r broses Asesu Effeithiau Amgylcheddol.

Dewisiadau amgen

0.15 Edrychwyd ar nifer o lwybrau gwahanol i'r llinell uwchben arfaethedig cyn cadarnhau'r llwybr sy'n cael ei ffafrio. Ystyriwyd gwahanol leoliadau (is-orsafoedd) y gellid atgyfnerthu'r rhwydwaith ohonynt. Roedd y rhain yn cynnwys cysylltiadau o Amwythig, yr Eglwys Wen, Cei Connah, Crewe a Thrawsfynydd.

0.16 Yn ogystal â lleoliadau amgen i linell uwchben i atgyfnerthu'r cyflenwad i ardaloedd i'r de o Legacy, ystyriwyd dulliau amgen hefyd o atgyfnerthu'r rhwydwaith yn yr ardal rhwng Legacy a Chroesoswallt. Roedd y rhain yn cynnwys uwchraddio'r llinellau dosbarthu 132kV presennol rhwng Legacy a Chroesoswallt a darparu'r atgyfnerthiad drwy ddefnyddio ceblau dan ddaear, yn hytrach na llinellau uwchben.

0.17 Atgyfnerthu'r rhwydwaith 132kV drwy linell uwchben rhwng Legacy a Chroesoswallt yw'r ateb mwyaf economaidd a mwyaf derbyniol yn amgylcheddol.

0.18 Archwiliwyd pedwar opsiwn cyffredinol o ran llwybr y llinell uwchben i ddechrau;

- I'r dwyrain o'r A483(T)/A5;
- I'r gorllewin o'r A483(T)/A5;
- Dilyn coridor ffordd yr A483(T)/A5; ac
- Yn gyfochrog â'r llinell uwchben 132kV bresennol rhwng Legacy a Chroesoswallt.

0.19 Cynigiai'r opsiwn i'r dwyrain o'r A483(T)/A5 fwy o gyfleoedd i gymathu llinell uwchben yn y tirwedd ac roedd iddo lai o gyfyngiadau na'r opsiynau eraill. Canolbwyntiwyd ar yr ardal hon wrth wneud gwaith manwl pellach i ddewis llwybr.

0.20 Y prif faterion yr oedd angen rhoi sylw iddynt wrth bennu'r llwybr oedd:

- Croesi dyffryn Dyfrdwy, sydd ag ochrau serth ac yn goediog iawn;
- Presenoldeb sawl parcdir hanesyddol yn yr ardal: Erddig, Wynnstay, Brynkinalt
- Camlas Shropshire Union (cangen Llangollen);
- Clawdd Offa a Chlawdd Wat;

- Ardaloedd cadwraeth arbennig safleoedd bywyd gwyllt o bwys rhyngwladol, sef Safleoedd Madfallod Johnstown ac afon Dyfrdwy; a'r
- Tir bryniog gyda gorchudd helaeth o goed aeddfed a phatrwm anheddu gwasgaredig.

.0.21 Cafodd llwybr y llinell uwchben ei ddatblygu drwy nifer o opsiynau nes cyrraedd y 'Llwybr a Gâi ei Ffafrio', a oedd yn cynrychioli dealltwriaeth SP Manweb o'r ffordd fwyaf priodol i ddarparu'r atgyfnerthiad. Ystyriwyd opsiynau gan gadw mewn cof y ddwy rwymedigaeth i redeg rhwydwaith effeithlon a chost effeithiol ac i ystyried yr amgylchedd a mwynderau.

0.22 Cynhaliwyd ymgynghoriad cyhoeddus ynglŷn â'r Llwybr a Gâi ei Ffafrio ym mis Chwefror 2007. Cynhyrchwyd deunydd arddangos a Dogfen Ymgynghori. Anfonwyd y Ddogfen Ymgynghori at amrywiaeth eang o ymgyngoreion i geisio'u barn ar y cynnig.

0.23 Yn dilyn pryderon a godwyd yn ystod yr ymgynghoriad cyhoeddus ynglŷn â'r cynllun, nodwyd cynnig amgen i ran ddeheuol y llwybr. Ar ôl ail gylch ymgynghori, ystyriwyd sylwadau'r rhai a ymatebodd i'r cynnig a chadarnhawyd y cynnig amgen fel y 'Llwybr Arfaethedig'.

0.24 Gofynnodd SP Manweb i'r adran berthnasol o'r llywodraeth am ei barn ynglŷn â'r materion a ddylai gael eu hystyried yn yr Asesiad o'r Effaith Amgylcheddol (y Farn Gwmpasu). Ymgynghorwyd â'r awdurdodau cynllunio lleol a rhoddasant eu barn. Ymgymerwyd â'r Asesiad o'r Effaith Amgylcheddol ar y sail hon..

Y llinell uwchben arfaethedig

0.25 Fel arfer, mae cysylltiadau 132kV ar ffurf llinellau uwchben sy'n cael eu cludo ar dyrau o ddelltwaith dur hyd at 26m o uchder. Cafodd math newydd o linell uwchben, a gynhelir gan bolion pren hyd at 16m o uchder, ei awgrymu ar gyfer yr atgyfnerthiad hwn. Mae unedau cynnal byrrach yn golygu bod y rhychwant rhwng y polion yn fyrrach. Gyda llinellau o'r math hwn sy'n cael eu cynnal gan bolion pren, y rhychwant ar gyfartaledd yw 80m, o'i gymharu â chyfartaledd o 280m gyda system tyrau delltwaith dur 132kV. Tybiwyd y byddai'n haws cymathu'r polion pren i'r tirwedd rhwng Legacy a Chroesoswallt, lle mae gorchudd helaeth o goed aeddfed.

0.26 Mae pob uned gynnal bren yn cynnwys dau bolyn fel arfer gyda gwaith dur uwchben yn cynnal yr ynysyddion a 3 dargludydd a'r wifren ddaearu. (Y dargludyddion yw'r gwifrau sy'n cario'r trydan). Gweler Ffigur NTS2: Mathau Arfaethedig o Unedau Cynnal.

0.27 Datblygwyd y cynnig fel ei fod yn darparu llwybr rhwng yr is-orsafoedd sy'n cwtogi'r hyd gofynnol i'r eithaf ac, ar yr un pryd, yn parchu'r cyfyngiadau amgylcheddol cyn belled â phosibl.

0.28 Mae cyfyngiadau lle ar y naill ben a'r llall o'r cysylltiad yn golygu y câi'r atgyfnerthiad arfaethedig ei gysylltu â'r is-orsafoedd yn Legacy a Chroesoswallt gan geblau dan ddaear.

0.29 Mae'r atgyfnerthiad arfaethedig yn cynnwys llinell uwchben 20.6km o hyd, gyda chyfanswm o 3km o geblau dan ddaear yn cysylltu â'r is-orsafoedd. Dangosir y llwybr arfaethedig ar Ffigur NTS1: Y Llwybr Arfaethedig.

Y llwybr

0.30 Mae'r llwybr arfaethedig yn dilyn llinell sy'n rhedeg o'r gogledd i'r de yn gyffredinol drwy Fwrdeistref Wrecsam a bwrdeistref Croesoswallt, yn Swydd Amwythig. Mae'n mynd drwy ran fach o ddosbarth Gogledd Swydd Amwythig, yng nghyffiniau pentref St Martin's.

0.31 Mae'r llwybr yn rhedeg o is-orsaf Legacy gan ddefnyddio ceblau dan ddaear am 1.6km yn fras. I'r dwyrain o Ffordd Wrecsam, mae'n trosglwyddo i linell uwchben ar bolion pren ac yn parhau tua'r de-ddwyrain ar draws tir fferm agored, o amgylch ffin ogleddol Ardal Cadwraeth Arbennig Safleoedd Madfallod Johnstown. Byddai un polyn cynnal yn cael ei leoli o fewn ffin Ardal Cadwraeth Arbennig Safleoedd Madfallod Johnstown.

0.32 Mae'r llwybr yn mynd yn ei flaen tua'r de-ddwyrain drwy dir amaethyddol, gan groesi Clawdd Wat (Heneb Gofrestredig) ger Gyfelia.

0.33 Mae'r llwybr yn mynd i'r dwyrain o Barc Wynnstay (Parcdir Cofrestredig Gradd I), ac yna'n troi tua'r de drwy dir amaethyddol gan ddilyn coetir ceunant i mewn i ddyffryn Dyfrdwy. Byddai'r llinell uwchben yn croesi afon Dyfrdwy dan ddefnyddio toriad presennol yng nghoetir y dyffryn ar y lan ogleddol.

0.34 I'r de o afon Dyfrdwy, mae'r llwybr yn dilyn cyfuchlineddau naturiol dyffryn afon Ceiriog i Tenement, lle mae'n pontio'r afon ac yn croes darn anghofrestredig o Glawdd Wat ar ben ochr ddwyreiniol y dyffryn.

0.35 I'r dwyrain o'r dyffryn, mae'r llwybr yn parhau tua'r de-ddwyrain o amgylch ymyl ddwyreiniol pentref St Martin's, yna mae'n dilyn llinell dde-orllewinol drwy ardal Upper Wiggington. Mae'n croesi tir uchel yng nghyffiniau Camlas Shropshire Union i'r gogledd o New Marton Locks.

0.36 O'r fan hon, mae'r llwybr yn rhedeg tua'r de-orllewin yn gyffredinol, i'r gorllewin o bentrefi bach Henlle a Hindford. Mae'r llwybr yn ffinio â Safle o Ddiddordeb Gwyddonol Arbennig Fernhill Pastures. Mae'n mynd heibio i'r gorllewin o adeilad rhestredig Great Fernhill, yna mae'n teithio tua'r gorllewin tuag at yr A5 rhwng Ysbyty Orthopedig Croesoswallt a Park Hall Farm Countryside Experience.

0.37 Byddai'r llinell uwchben yn gorffen wrth ymyl yr A5, a châi'r cysylltiad 1.4km terfynol ag is-orsaf Croesoswallt ei ddarparu drwy gebl dan ddaear ochr yn ochr â'r A5.

Effeithiau amgylcheddol

0.38 Ymgymerwyd â'r broses o Asesu'r Effeithiau Amgylcheddol er mwyn canfod effeithiau arwyddocaol tebygol y llinell uwchben arfaethedig. Disgrifir yr effeithiau hyn yn yr adrannau dilynol. Gallant fod yn effeithiau sy'n deillio o'r gwaith o adeiladu'r llinell uwchben neu o'i gweithredu yn ystod ei hoes ar ei hyd.

0.39 Drwy gydol y broses o Asesu'r Effeithiau Amgylcheddol, mae SP Manweb wedi ceisio cyfyngu ar effeithiau'r llinell uwchben arfaethedig. Lle nodwyd effeithiau amgylcheddol arwyddocaol, efallai i'r cynnig gael ei newid i'w hosgoi, neu fod mesurau wedi cael eu datblygu i leihau neu wneud iawn am yr effeithiau hynny. Gelwir y camau hyn yn liniaru.

0.40 Ymgymerwyd â llawer o'r gwaith o bennu'r llwybr er mwyn osgoi problemau amgylcheddol posibl.

0.41 Mae'r atebion pennu llwybr neu'r atebion technegol wedi osgoi neu leihau effeithiau'r llinell uwchben i'r fath raddau fel mai prin yw'r effeithiau arwyddocaol sy'n weddill. Disgrifir y rhain isod.

Effeithiau gweledol

Y cyd-destun gweledol cyffredinol

0.42 Tir fferm bryniog yw'r rhan fwyaf o'r ardal gyda chryn lawer o orchudd coed. Tirwedd gwledig ydyw a phrin yw'r pentrefi, er bod rhaid ffermydd a phentrefannau bach wedi'u gwasgaru yma ac acw, wedi'u cysylltu gan lonydd cul, troellog, un trac yn aml. Gwrychoedd tal (dros 2m o uchder) sy'n ffurfio terfynau'r mwyafrif o'r rhan. Mae'r rhain yn bwysig, yn effeithio ar y golygfeydd ac ar weledded o'r rhwydwaith ffyrdd, gan nad oes posibl gwerthfawrogi'r olygfa ehangach yn aml ond drwy glwydi caeau. Mewn mannau eraill, mae'r gorchudd coed yn bwysig o ran lleihau'r ardal y gellir gweld y llinell uwchben ohoni. Mae 'effaith haenog' y coed niferus ar derfynau caeau yn neilltuol o bwysig.

0.43 Mae yna, fodd bynnag, nodweddion ychwanegol yn y tirwedd sy'n effeithio ar weledded a'r cyfleoedd i weld golygfeydd.

0.44 Mae'r tir yn codi'r tua'r gorllewin o'r ardal dan sylw, tua godreon Bryniau Clwyd. Er bod y rhain yn rhy bell i weld y llinell uwchben, maent yn ffurfio nodwedd amlwg a gorwel neu gefnlen uwch mewn llawer o'r golygfeydd tua'r gorllewin.

0.45 Mae dyffryn afon Dyfrdwy, gyda'i hafnau serth a'i lednentydd, hefyd yn dylanwadu ar weledded. Mae'r golygfeydd o fewn y dyffrynnoedd yn amgaeedig gan mwyaf, ac nid yw'r dyffrynnoedd eu hunain yn y golwg efallai o'r cyffiniau ehangach.

0.46 Yng ngogledd yr ardal dan sylw, mae tirffurfiau uwch, artiffisial, hen domenni rwbel y Bers a Hafod yn nodweddion mewn llawer o olygfeydd ac maent hefyd yn fannau da i gael golygfeydd panoramig ohonynt. Tua'r de, mae rhagfuriau arglawdd bryngaer Hen Groesoswallt yn cynnig man tebyg, hygyrch i'r cyhoedd, y gellir mwynhau golygfeydd ohono.

0.47 Mae simnai a phlufyn mwg cysylltiol ffatri Kronospan yn y Waun yn nodwedd amlwg mewn llawer o olygfeydd. Mae cefnffordd yr A483/A5 yn mynd drwy'r ardal. Er nad yw wyneb y ffordd yn y golwg yn aml, mae'r polion goleuadau ffordd a'r cylchfannau, cerbydau'n symud a'r stribedi coetir wrth ymyl y ffyrdd yn amlwg mewn golygfeydd. Bydd y rhan fwyaf o'r bobl a fydd yn gweld y llinell uwchben yn defnyddio'r A483/A5(T).

0.48 Mae Camlas Shropshire Union yn nodwedd linol mewn golygfeydd o'r tir uwch o'i amgylch.

0.49 Caiff y tirwedd ei groesi gan lonydd troellog cul a rhwydwaith o lwybrau troed. Er mai cymharol ychydig o bobl sy'n defnyddio'r lonydd a'r llwybrau troed o'u cymharu â'r gefnffordd brysur, mae eu sylw yn fwy tebygol o fod yn canolbwyntio ar werthfawrogi'r tirwedd a'r golygfeydd.

I ba raddau y mae'r llinell uwchben yn weladwy

0.50 Dewiswyd y llinell arfaethedig er mwyn lleihau'r effaith ar gymeriad y tirwedd a'r golygfeydd. Mae'n anochel y bydd llinell uwchben yn weladwy yn y tirwedd. Fodd bynnag, bydd natur y polion pren a ddewiswyd i gynnal y llinell yn hytrach na thyrau dur (peilonau) yn cyfyngu'n sylweddol ar faint yr effaith hon.

0.51 Byddai'r rhan fwyaf o'r llinell uwchben arfaethedig yn debygol o fod yn weladwy dros bellteroedd cymharol fyr gan fod coed, gwrychoedd a choetiroedd yn cuddio'r golygfeydd.

0.52 Mewn rhai ardaloedd, mae llai o sgrinio nag a geir fel arfer yn y tirwedd hwn. Yr ardaloedd hynny yw:

- rhwng Pentre Bychan (B5605) a'r A483(T), lle mae cyfleoedd i weld golygfeydd ar i lawr o dir sy'n codi tua'r gorllewin, ac o hen domenni rwbel y pyllau glo yn Hafod a'r Bers;
- yn ardal Parc Eyton, o amgylch croesfan yr A539, lle mae'r tirwedd yn llai bryniog a mwy agored;
- lle mae'r llinell yn croesi llethr dwyreiniol, uchaf dyffryn Ceiriog yng nghyffiniau Bramble Wood i Ben-y-Bryn, mae'n debygol o fod yn weladwy o ddyffryn Ceiriog ei hun ac o'r tir sy'n codi tua'r gorllewin, yng nghyffiniau Halton, rhyw 2km i ffwrdd, i'r dwyrain o'r A5(T);
- yn ardal Pentre Morgan i'r gogledd-ddwyrain o bentref St Martin's, lle mae'r tirwedd yn fwy agored;
- yn y dyffryn bas lle saif camlas Shropshire Union, lle mae cyfleoedd i weld golygfeydd o dir uwch tua'r dwyrain a'r gorllewin, ac mae tirwedd llawr y dyffryn yn gymharol agored;
- o gwmpas Henlle, ger Hindford, mae'r tirwedd yn gymharol uchel, gwastad ac agored; ac
- yn yr ardal rhwng Park Hall a'r Ysbyty Orthopedig, lle mae'r tir yn wastad gyda llai o orchudd coed nag a geir yn gyffredinol, ac mae tir sy'n codi tua'r gorllewin (i'r gorllewin o'r A5(T)), yn cynnwys caer Hen Groesoswallt.

Yr effaith ar y golygfeydd

0.53 Mae'r newidiadau i'r golygfeydd wedi cael eu hasesu o 36 o olygfannau y cytunwyd arnynt gyda'r awdurdodau cynllunio lleol fel y golygfannau sy'n debygol o fod yn fwyaf sensitif ar hyd y llwybr arfaethedig. Byddai effeithiau gweledol y cynnig yn arwyddocaol mewn un rhan o dair o'r golygfannau a aseswyd, ond ni fyddai effeithiau gweledol andwyol difrifol.

0.54 Dim ond pedwar o'r 13 o olygfannau lle mae'r effeithiau gweledol yn arwyddocaol sydd ymhellach na 250m o'r llwybr arfaethedig. Fel y byddid yn disgwyl, mae'r asesiad yn dangos y byddai'r effeithiau mwyaf yn digwydd mewn golygfeydd sy'n agos at y llinell uwchben arfaethedig, yn hytrach nag o'r golygfannau sydd ymhellach oddi wrthi.

0.55 Rhagwelwyd effeithiau gweledol canolig yn y golygfeydd o'r mannau canlynol:

- ymyl ddwyreiniol yr anheddiad ym Mhentre Bychan;
- y llwybr cyhoeddus (Llwybr Treftadaeth Clawdd Wat) ar hyd Clawdd Wat, ger Gyfelia, lle mae'r llwybr yn croesi'r clawdd;
- ymyl parcdir hanesyddol cofrestredig Parc Wynnstay;
- yn nyffryn afon Ceiriog, Ardal Tirwedd Arbennig a ddynodwyd yn lleol, yng nghyffiniau Tenement;
- llwybrau cyhoeddus gyda golygfeydd panoramig dros dirweddau mwy agored i'r gogledd o bentref St Martin's, i'r gorllewin o Wigginton ac i'r de o Rosygadfa;
- yn nyffryn bas, cymharol agored, Camlas Shropshire Union; a'r
- B5009 ger adeilad rhestredig Great Fernhill.

0.56 Mae'r golygfannau a ddewiswyd yn ddetholiad o'r golygfannau mwyaf sensitif gerllaw'r llinell uwchben arfaethedig, felly mae'r effeithiau gweledol a brofir o fannau eraill yn debygol o fod yn llai. Ni fyddai llawer o'r llinell uwchben arfaethedig ond i'w gweld pan fydd y sawl sy'n edrych yn gymharol agos ati, gan y byddai'r coed a'r gwrychoedd yn cuddio'r golygfeydd.

0.57 Drwyddi draw, mae'r effeithiau gweledol arwyddocaol yn gyfyngedig o ran eu nifer a'u dosbarthiad daearyddol.

Yr effaith ar y tirwedd

Cymeriad y tirwedd

0.58 Yn rhannol, yr ardal yr âi llwybr y llinell uwchben arfaethedig drwyddi yw gororau Cymru rhwng Bryniau Clwyd ac afon Dyfrdwy ac, yn rhannol, wastadedd eang Swydd Amwythig. Tirwedd gwledig yw hwn gyda chaeau a gwrychoedd yn derfynau o'u hamgylch a llawer o goed yn tyfu o'r gwrychoedd, coed derw gan mwyaf, sy'n gwneud i'r ardal ymddangos yn bur goediog.

0.59 Ni fyddai'r llinell uwchben arfaethedig yn effeithio ar unrhyw ardaloedd o werth cadwraethol a ddynodwyd yn genedlaethol. Byddai tua 5 cilometr o'r llinell uwchben o fewn ardal sy'n agos ar ddyffryn Dyfrdwy sydd wedi'i dynodi am ei gwerth cadwraethol lleol.

0.60 Byddai'r llinell uwchben o fewn 1km i Barcdiroedd Hanesyddol Cofrestredig Erddig, Wynnstay, Pen-y-lan a Brynkinalt.

Yr effaith ar gymeriad y tirwedd

0.61 Byddai'r llinell uwchben arfaethedig yn cael effaith fach neu ganolig ei harwyddocâd ar yr ardaloedd tirwedd a ddynodwyd yn lleol yn ei chyffiniau agos. Dewiswyd yr aliniad er mwyn osgoi effeithio ar lannau serth, coediog, hynod sensitif afon Dyfrdwy ac effaith fach o ran arwyddocâd a gâi ar gymeriad yr ardal hon.

0.62 Nid yw'r llwybr yn effeithio'n uniongyrchol ar unrhyw barciau hanesyddol cofrestredig na gerddi, na'u gosodiad hanfodol, ac ni fyddai'n cael unrhyw effaith ar gymeriad tirwedd yr ardaloedd hyn.

0.63 Arwyddocâd bach gan mwyaf a fyddai i'r effaith y mae'r llinell uwchben arfaethedig yn debygol o'i chael ar gymeriad y tirwedd yn y cyffiniau agosaf ati.

0.64 Aseswyd bod yr effaith ar gymeriad y tirwedd o arwyddocâd canolig ar raddfa leol am un rhan o dair yn fras o hyd y llinell uwchben arfaethedig. Yn gyffredinol, adrannau yw'r rhain lle bernir bod i'r tirwedd sensitifrwydd canolig neu uwch i'r math o ddatblygiad a awgrymir. Nodwyd y rhannau hyn fel:

- cyffiniau Park Eyton;
- y llethr uchaf ar ochr ddwyreiniol dyffryn Ceiriog;
- rhwng St Martin's a Phentre Morgan, yng nghyffiniau Ellesmere Road;
- o amgylch Camlas Shropshire Union;
- Yn nyffryn afon Perry; a'r
- Tirwedd cymharol agored rhwng afon Perry a'r A5.

0.65 Byddai'r effaith ar gymeriad y tirwedd yn digwydd mewn ardaloedd lleol iawn yn hytrach na thros ardaloedd ehangach. Bydd yr effaith ar y rhan fwyaf o'r llwybr yn fach, heb unrhyw effaith ag arwyddocâd mwy na chanolig

Yr effaith ar ecoleg a chadwraeth natur

0.66 Mae asesiad wedi cael ei wneud o'r effaith bosibl ar fuddiannau ecolegol (cynefinoedd, derbynyddion fflora a ffawna) yn sgil adeiladu a gweithredu'r llinell uwchben arfaethedig. Cafwyd gwybodaeth o nifer o ffynonellau. Gwnaed amryw o arolygon maes ecolegol gan ecolegwyr profiadol a chymwysedig i sefydlu pa gynefinoedd a rhywogaethau (gan ganolbwyntio ar ffawna a warchodir) sy'n bresennol ar hyd coridor y llwybr arfaethedig. Darparwyd gwybodaeth hanesyddol ychwanegol am fuddiannau ecolegol gan nifer o gyrff cadwraeth natur.

0.67 Byddai'r llinell uwchben arfaethedig yn mynd yn bennaf drwy laswelltir sydd wedi cael ei wella'n amaethyddol, sy'n cael ei isrannu gan wrychoedd. Mae cynefinoedd eraill llai helaeth ar hyd y llwybr arfaethedig yn cynnwys coetiroedd llydanddail, glaswelltir corsiog, prysg a thir âr. Ceir hefyd nifer o lynnoedd mewn caeau.

0.68 Mae Safleoedd Madfallod Ardal Cadwraeth Arbennig Johnstown ac afonydd Dyfrdwy a Cheiriog (rhan o Ardal Cadwraeth Arbennig afon Dyfrdwy a Llyn Tegid) yn safleoedd bywyd gwyllt o bwys rhyngwladol o fewn ardal yr arolwg. Mae dau safle o bwys cenedlaethol, SDdGA Nant-y-Belan a Choed Prynela a SDdGA Fernhill Pastures, wedi'u lleoli yn ymyl coridor y llwybr. Byddai'r llinell uwchben arfaethedig yn croesi Safle Bywyd Gwyllt Moor Wood a Bramble Wood (ardal o Goetir Hynafol Lled-naturiol), ill dau o werth sirol o ran cadwraeth natur.

0.69 Byddai'r llinell uwchben arfaethedig yn croesi ardal o gynefin ffen tir isel, sy'n cael ei hystyried o bwys sirol-cenedlaethol oherwydd prinder. Pennwyd bod cynefinoedd eraill yn ardal yr arolwg o bwys lleol.

0.70 Ymysg y ffawna a aseswyd yn unigol yng nghyd-destun y datblygiad hwn mae:

- dyfrgwn (gwerth sirol);
- madfallod dŵr cribog, adar tir ffermio, y dylluan wen, y llygoden ddŵr (gwerth dosbarth); a
- moch daear, ystlumod, ysgyfarnogod a'r pathew (o werth yn y cyffiniau agos).

0.71 Nid yw'r rhywogaethau pysgod yn afon Dyfrdwy wedi cael eu hasesu'n unigol ond cânt eu hystyried yn rhan o'r Ardal Cadwraeth Arbennig yn ei chyfanrwydd, sydd o werth rhyngwladol.

0.72 Fel rhan o ddatblygiad graddol llwybr y llinell uwchben arfaethedig, mae amryw o gyfyngiadau ecolegol cydnabyddedig wedi cael eu hystyried. Osgowyd safleoedd dynodedig ac ardaloedd o gynefinoedd mwy sensitif lle'r oedd hynny'n bosibl.

0.73 Nodwyd effeithiau a allai fod yn arwyddocaol ar 17 o dderbynyddion ecolegol. Mae'r rhain yn cynnwys safleoedd dynodedig, cynefinoedd pwysig a ffawna. Caiff mesurau lliniaru eu sefydlu i leihau'r effeithiau hyn i lefelau anarwyddocaol. Bydd dulliau gweithredu 'ymarfer gorau' yn cael eu mabwysiadu yn y gwaith adeiladu a bydd mesurau lliniaru yn cael eu defnyddio hefyd mewn rhai achosion lle nad oes effeithiau arwyddocaol.

0.74 Bydd y llinell uwchben yn cael effaith arwyddocaol yn y tymor byr i ganolig ar goetiroedd collddail cymysg ar dir isel (a choed unigol) sy'n gynefin o bwysigrwydd lleol. Amcangyfrifir y byddai'r llinell

uwchben yn effeithio ar 119 o goed ac ardal o 1.34 hectar o grwpiau coed coetir, er mai tocio neu ostwng uchder rhai o'r rhain fyddai'n ofynnol, yn hytrach na'u cwympo. Yn y tymor canolig i hir, bydd coed a blannir yn lle'r rhai a gaiff eu cwympo yn aeddfedu a chaiff yr effaith ei lleihau i un anarwyddocaol. Os canfyddir nad oes posibl plannu coed yn lle'r rhai sy'n cael eu cwympo, byddai'r effaith tymor hir yn parhau'n arwyddocaol, ond ar raddfa leol. Byddai SP Manweb yn gwneud cyfraniad i ymddiriedolaeth byd natur priodol i wneud iawn am y golled hon.

0.75 Bydd y mesurau lliniaru arfaethedig yn sicrhau na chaiff y gwaith o adeiladu a gweithredu'r llinell uwchben arfaethedig unrhyw effaith arwyddocaol ar unrhyw gynefinoedd na ffawna sensitif eraill.

Yr effaith ar archeoleg a threftadaeth ddiwylliannol

0.76 Mae'r asesiad archeoleg yn ystyried effeithiau tebygol adeiladu a gweithredu'r llwybr arfaethedig ar asedau'r dreftadaeth ddiwylliannol, yn cynnwys safleoedd archeolegol, adeiladau hanesyddol, parcdiroedd hanesyddol cofrestredig a thirweddau hanesyddol. Gwnaed asesiadau archeolegol yn y swyddfa, buwyd yn ymgynghori a chynhaliwyd arolwg maes er mwyn nodi'r asedau treftadaeth ddiwylliannol hynny y gallai'r datblygiad arfaethedig effeithio arnynt. Ystyriwyd hefyd y potensial fod y tir o dan y llinell uwchben arfaethedig yn cynnwys olion archeolegol wedi'u claddu, nad ydynt eto wedi cael eu canfod.

0.77 Mae cyfanswm o 79 o nodweddion treftadaeth archeolegol a diwylliannol wedi cael eu nodi o fewn coridor 1km o amgylch y llwybr arfaethedig. Yn y coridor 100m y gallai effeithiau uniongyrchol ddigwydd ynddo o bosibl, mae dwy Heneb Gofrestredig, un adeilad rhestredig, a phedwar safle nad ydynt wedi cael eu dynodi. Mae'r coridor 100m hefyd yn cynnwys 126 o wrychoedd o bwys hanesyddol. Mae Clawdd Wat yn nodwedd archeolegol ac mae rhai rhannau ohono wedi cael eu dynodi'n Heneb Gofrestredig. Mae'r llwybr arfaethedig yn croesi Clawdd Wat ddwywaith. Mae un o'r croesiadau dros ddarn cofrestredig.

0.78 Osgowyd effeithiau uniongyrchol ar y darn cofrestredig o Glawdd Wat drwy leoli'r unedau cynnal mor bell â phosibl oddi wrth yr heneb, gan arwain at effaith uniongyrchol weddilliol o arwyddocâd bach. Mae safle'r darn anghofrestredig o'r clawdd mewn perthynas â'r topograffi yn golygu ei bod yn annhebygol y gellir osgoi lleoli polyn cynnal yn agos at yr heneb. Bydd mesurau lliniaru'n cael eu rhoi ar waith, yn cynnwys rhaglen o gloddio archeolegol o dan reolaeth mewn unrhyw ardaloedd y bydd seiliau'r unedau cynnal yn effeithio arnynt. Fodd bynnag, mae'n debygol y bydd hon yn parhau i fod yn effaith andwyol ac arwyddocaol o bwys ar Glawdd Wat.

0.79 Nododd yr asesiad bum safle treftadaeth ddiwylliannol y byddid yn effeithio'n arwyddocaol ar ansawdd eu gosodiad o ganlyniad i'r llinell uwchben arfaethedig. Y rheini yw'r ddwy heneb gofrestredig (Clawdd Wat i'r de o bont Black Brook a gwyddfa Hafod-y-Bwch), adeilad rhestredig Gradd II (Bryn House), a dau safle nad ydynt wedi cael eu dynodi (Camlas Shropshire Union (cangen Llangollen) a'r rhan anghofrestredig o Glawdd Wat a ddisgrifiwyd yn gynharach).

0.80 Mae rhaglen liniaru gynhwysfawr yn cael ei chynnig i leihau'r effaith ar yr adnodd archeolegol, hysbys ac anhysbys. Bydd rhoi rhaglen o'r fath ar waith yn lleihau'n gyffredinol unrhyw

effeithiau gweddilliol posibl yn deillio o'r cynllun fel nad ydynt yn ddim ond effeithiau andwyol bach.

Yr effaith ar reolaeth tir

0.81 Tarfir rhywfaint ar weithgareddau ffermio ar hyd llwybr y llinell uwchben arfaethedig yn ystod y cyfnod adeiladu. Mae polion cynnal mewn caeau yn debygol o achosi rhywfaint o anhwylustod i weithgareddau ffermio ond ychydig iawn o darfu a gâi ei achosi gan gynnal a chadw'r llinell uwchben. Ystyrir mai bychan fyddai effaith y llinell uwchben drwyddi draw ar fuddiannau amgylcheddol ar hyd coridor y llwybr ac na fyddai'n arwyddocaol.

Yr effaith ar adloniant a thwristiaeth

0.82 Mae cynllunio'r llwybr yn ofalus i osgoi cyfleusterau adloniant a thwristiaeth penodol wedi atal effeithiau uniongyrchol ar y mwyafrif o adnoddau cydnabyddedig. Mae'n bosibl yr effeithir ar adloniant a thwristiaeth lle mae'r llinell uwchben arfaethedig yn croesi llwybrau adloniadol, yn cynnwys Camlas Shropshire Union, Llwybr Maelor a Llwybr Clawdd Wat. Yn gyffredinol, caiff yr effeithiau hyn eu hystyried yn rhai bach ac nid ydynt felly yn arwyddocaol.

Yr effaith ar adnoddau mwynol a safleoedd tirlenwi

0.83 Byddai'r llinell uwchben arfaethedig yn croesi ardaloedd lle mae'r adnoddau mwynol yn cael eu gwarchod a lle mae gofyn ymgynghori cyn datblygu. Lefel fach iawn o effaith a gâi llinell uwchben ar yr adnoddau.

0.84 Ni châi'r llinell uwchben arfaethedig unrhyw effaith ar safleoedd tirlenwi.

Yr effaith ar seilwaith

0.85 Ni châi'r llinell uwchben arfaethedig unrhyw effaith arwyddocaol ar gysylltiadau ffordd, rheilffordd na chamlas na seilwaith cyffredinol ar hyd coridor y llwybr.

Effaith meysydd electro-magnetig ar iechyd dynol

0.86 Mae wedi cael ei awgrymu y gallai fod cysylltiad rhwng amryw o broblemau iechyd mewn pobl a chael cysylltiad â meysydd magnetig amledd-pŵer. Mae SP Manweb o'r farn fod rhaid cymryd hyd yn oed bosibilrwydd bach iawn o risg i iechyd o ddifrif a bydd yn parhau i weithredu ar gyngor cyfredol y Llywodraeth a'r Asiantaeth Diogelu Iechyd yn y mater hwn. Mae cynllun a gweithrediad y llinell uwchben yn gyson â'r cyngor hwn ac ni ragwelir unrhyw effeithiau andwyol.

Yr effaith o ran sŵn

0.87 Mae'r lefelau sŵn a gynhyrchir yn ystod gwaith adeiladu'r llinell ar bolion pren yn debygol o fod yn isel, a

bydd unrhyw weithgaredd sy'n creu cryn dipyn o sŵn yn ddarostyngedig i'r gofynion ymarfer gorau o safbwynt Gofynion Iechyd a Diogelwch a Gofynion Iechyd yr Amgylchedd.

0.88 Tra bydd y llinell uwchben yn gweithredu, ni fydd modd clywed y lefelau sŵn-clywadwy o'r eiddo agosaf, ac nid ydynt yn arwyddocaol.

Yr effaith ar gynigion datblygu a pholisi cynllunio

0.89 Ni fyddai'r llwybr arfaethedig yn mynd drwy unrhyw ardaloedd sydd wedi cael eu dyrannu ar gyfer datblygu. Nid oedd unrhyw geisiadau am ganiatâd cynllunio a fyddai'n effeithio ar y llinell arfaethedig yn disgwyl am benderfyniad cyn i'r cais gael ei gyflwyno (cynhaliwyd chwiliad ym mis Ionawr 2009).

Rheoli effeithiau amgylcheddol

0.90 Mae SP Manweb wedi ymrwymo i roi'r mesurau lliniaru sy'n gynwysedig yn y Datganiad Amgylcheddol ar waith. Caiff cynllun rheolaeth amgylcheddol ei gynhyrchu i reoli a chyfeirio'r arferion gwaith wrth i'r prosiect gael ei adeiladu. Byddir yn cynnal asesiadau risg ac archwiliadau amgylcheddol. Bydd cynrychiolydd o SP Manweb ar y safle yn ystod y gwaith adeiladu..

Crynodeb

0.91 Bydd ychwanegu cylched trydanol rhwng Legacy a Chroesoswallt yn darparu atgyfnerthiad hanfodol i'r system ddosbarth foltedd uchel yn ardal Swydd Gaer, Glannau Mersi, Gogledd a Chanolbarth Cymru. Mae SP Manweb yn bwriadu adeiladu llinell uwchben 132kV newydd a gâi ei chynnal ar bolion pren.

0.92 Mae llwybr wedi cael ei nodi ar gyfer y llinell uwchben newydd ar ôl archwilio nifer o lwybrau amgen yn fanwl ac yn dilyn ymgynghori helaeth â'r cyhoedd a'r awdurdodau statudol.

0.93 Mae SP Manweb yn Weithredwr Rhwydwaith Dosbarthu trwyddedig ac mae rhwymedigaeth arno i ddarparu atgyfnerthiad sy'n ddichonadwy yn dechnegol ac yn hyfyw yn economaidd, gan roi ystyriaeth briodol i'r amgylchedd a mwynderau. Mae'r llwybr a'r atebion technegol a fabwysiadwyd ar gyfer yr atgyfnerthiad hwn o'r rhwydwaith 132kV wedi arwain at gynnig na fyddai ond yn creu effeithiau arwyddocaol cyfyngedig mewn ardaloedd lleol. Mae'r nifer gyfyngedig o effeithiau arwyddocaol (na ellir eu hosgoi mewn datblygiad o'r math hwn) yn dangos bod SP Manweb wedi cydymffurfio â'r rhwymedigaethau hyn.

1.0 INTRODUCTION

Background to the project

1.1 SP Manweb plc has a statutory duty under Section 9 of the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity distribution.

1.2 SP Manweb plc is the holder of an Electricity Distribution Licence for the Cheshire, Merseyside, North and Mid-Wales area. Condition 5 of the licence places a responsibility on the Company to plan and develop the distribution system in accordance with a standard not less than that set out in Engineering Recommendation P2/6, 'Security of Supply' (July 2006 revision). Condition 9 of the licence requires compliance with the Distribution Code which is designed so as to permit the development, maintenance and operation of an efficient, co-ordinated and economical system for the distribution of electricity.

1.3 To meet these requirements, SP Manweb proposes to reinforce the 132kV distribution system between Legacy substation and Oswestry substation, ensuring continued compliance with its statutory duties and to secure supplies to approximately 80,000 customers.SP Manweb is proposing to reinforce its electricity distribution network by constructing a new 132kV wood pole power line.

1.4 The reinforcement will consist of an overhead line, approximately 21 kilometres in length, with a cable section connecting each end to the substations at Legacy and Oswestry respectively. The proposed route is shown on Figure 1.1.

Legal context/statutory consents procedure

1.5 A number of legal provisions apply in the UK to the development of overhead electricity distribution lines, these are principally the Electricity Act 1989, and the Electricity Works (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2007 (the EIA Regulations). Section 37 of the 1989 Act stipulates that consent is required from the Department for Energy and Climate Change (DECC) for consent to construct and operate any overhead line above 20kV.

1.6 All licensed Distribution Network Operators are required by Schedule 9 of the 1989 Act to take account of the following factors in formulating any relevant proposals (for the installation of overhead transmission lines):
"(a) to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest; and,
(b) to do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects."

Section 37 application

1.7 This Environmental Statement will accompany an application to DECC for consent under Section 37 of the Electricity Act 1989 to construct and keep installed the proposed overhead distribution line. Notices of the application for consent are placed in newspapers to advertise the opportunity for representations to be made within a given period and the address to which these representations should be submitted. In addition, local planning authorities for the areas through which the proposed line is to be constructed are served notice of the application. The planning authorities in

relation to the proposal are: Wrexham County Borough Council and Shropshire Council. Shropshire Council replaced the former Shropshire County Council, Oswestry Borough Council and North Shropshire District Council on 1st April 2009. Throughout this document reference is made to the former planning authorities which were in place during the route identification and preparation of this Environmental Statement.

1.8 An application is made with the Section 37 application for a direction pursuant to Section 90(2) of the Town and Country Planning Act 1990 that planning permission shall be deemed to be granted for the proposed development.

Environmental Statement

1.9 The Environmental Statement has been prepared in accordance with the Electricity Works (Environmental Impact Assessment) (England and Wales) (Amendment) Regulations 2007. This is submitted voluntarily to accompany the application for consent to construct the overhead line. The Environmental Statement reports the assessment of the likely significant environmental impacts of the proposed overhead line.

Process of project development and assessment

1.10 SP Manweb have established an approach to developing overhead lines which responds both to the statutory requirements and the need to achieve wide ranging consultation. This comprises undertaking a Routeing Study in order to identify a Preferred Route, which, following consultation, is developed into a Proposed Route. This Proposed Route is then designed in greater detail and subject to environmental impact assessment. Key features of the process throughout are consultation, and the possibility of re-evaluating the emerging proposal in the light of more detailed information.

1.11 The approach outlined above is explained in greater detail in subsequent chapters, but is included here to provide an overview of the process.

Initial consultations and scope of EIA

1.12 Consultation is the process by which those organisations or individuals with an interest in the area influenced by the proposed development are identified. Their opinions or concerns are recorded and incorporated into the EIA. Consultation is a voluntary process ideally undertaken initially at an early stage in a project to allow as many views as possible to be expressed and for a picture to be developed of the likely impact of the project on aspects of environmental note. SP Manweb also recognises that consultees may also possess environmental information relating to the locality that will be important to the EIA decision-making processes.

1.13 Scoping is the way in which key issues are identified for inclusion in EIA studies, the areas affected and the level to which they should be studied. Its application seeks to determine the extent of, and approach to, an EIA.

1.14 As part of SP Manweb's initial planning for the project, the scoping and consultation process started with the company writing to over 50 statutory bodies and recognised organisations holding information likely to be of value to decision making regarding route options. Consultees were asked to supply information on constraints within the study area so that a balanced view as to the most appropriate route options could be formed. Meetings were held with specific consultees to further facilitate the flow of

information. The organisations which were contacted initially are listed in Appendix 1A.

1.15 Environmental consultants, The Environment Partnership (TEP), were appointed by SP Manweb to carry out a Routeing Study prior to a full Environmental Impact Assessment for the new overhead line. A Consultation Document was published explaining the results of the Routeing Study, and indicating a Preferred Route for the overhead line.

1.16 The aim of the consultation was to give all interested parties the opportunity to comment on the Preferred Route for the overhead line. Information was provided through the Consultation Document, via 2 public exhibitions and on the Company website. Meetings were also held with local authorities, nature conservation groups, cultural heritage bodies and parish councils.

1.17 Following the initial round of consultations in February 2007, SP Manweb reviewed the Preferred Route in light of comments received. After considering environmental and technical issues an alternative route was chosen for the southern section of the Preferred Route. A second round of consultations was undertaken on the Alternative Route and a second public exhibition held at St Martin's.

1.18 SP Manweb has compiled a Report on Consultation as a record of the consultation process, the comments received and SP Manweb's responses. This forms Appendix 1B to the Environmental Statement.

Further consultations

1.19 At subsequent stages, where new information and comments have been received directly from the public or from other sources, they have been incorporated, where appropriate, into this Environmental Statement and have assisted SP Manweb to decide on the final proposed route of the overhead line for which consent is sought to construct and operate.

Consultations with landowners and tenants

1.20 In consultation with landowners and tenants regarding the granting of wayleaves or easements over their land, the detailed design of the line has sought to accommodate the broad land management wishes of these tenants and landowners. This has sought, through consultation, to place poles along field boundaries wherever possible after consideration of their cumulative effect on other environmental criteria such as visual impact, flora and fauna.

Scoping opinion

1.21 Prior to the submission of an Environmental Statement, the EIA Regulations advise requesting a Scoping Opinion from the Secretary of State, DECC.

1.22 A request for a Scoping Opinion was submitted to the Secretary of State for Business, Enterprise and Regulatory Reform (BERR, the predecessor organisation of DECC) in December 2007, accompanied by a Scoping Report. This provided a brief description of the proposed route and set out the potential effects on the environment that it was considered should be assessed, together with their proposed methods of assessment.

1.23 A Scoping Opinion was received on 10th April 2008. The Secretary of State concluded that the Scoping Report provided an acceptable basis on which to prepare the EIA. Coverage was generally recognised as acceptable and comprehensive but there were areas where it was suggested additional material should be provided.

1.24 The Scoping Report (TEP ref 700.110revC) and the Scoping Opinion, are appended at Appendices 1C and 1D.

Potential significant effects identified during scoping

1.25 Chapter 6: Assessment of Effects, includes a table of potential significant effects identified during scoping, and incorporates consultees comments (Table 6.1). Reasons for discounting certain aspects from the scope of the environmental assessment are also given.

2.0 PROJECT NEED AND OBJECTIVES

2.1 SP Manweb plc has a statutory duty under Section 9 of the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity distribution.

2.2 SP Manweb plc is the holder of an Electricity Distribution Licence for the Cheshire, Merseyside, North and Mid-Wales area. Condition 5 of the licence places a responsibility on the Company to plan and develop the distribution system in accordance with a standard not less than that set out in Engineering Recommendation P2/6, 'Security of Supply' (July 2006 revision). Condition 9 of the licence requires compliance with the Distribution Code which is designed so as to permit the development, maintenance and operation of an efficient, co-ordinated and economical system for the distribution of electricity.

2.3 To meet these requirements, SP Manweb proposes to reinforce the 132kV distribution system between Legacy substation and Oswestry substation, ensuring continued compliance with its statutory duties and to secure supplies to approximately 80,000 customers.

2.4 SP Manweb is proposing to reinforce its electricity distribution network by constructing a new 132kV wood pole power line. The reinforcement will consist of an overhead line, approximately 21 kilometres in length, with a cable section connecting each end to the substations at Legacy and Oswestry respectively. The proposed route is shown on Figure 1.1.

Existing network

2.5 The SP Manweb 132kV network south of Wrexham supplies large parts of Mid Wales and comprises two 132kV overhead line circuits carried on one steel lattice tower line between Legacy substation and Oswestry substation. Two further 132kV circuits from Oswestry substation supply Newtown and Welshpool substations respectively. An additional 132kV overhead line from Legacy substation supplies Whitchurch substation. The substations at Legacy, Oswestry, Whitchurch, Welshpool and Newtown have 132/33kV transformers which supply the 33kV network which in turn supplies customers via lower voltage networks. A plan showing the regional context is shown in Figure 2.1.

2.6 The existing high voltage electrical system in the vicinity of Legacy and Oswestry is shown in Figure 2.2. This shows Lattice and Portal overhead lines, which have different types of support structures. The 33kV network (not shown) electrically interconnects certain groups of 132/33kV transformers at different substation sites and allows load to be immediately transferred between 132/33kV transformers following failures of circuits or transformers. The SP Manweb 33kV network utilises both overhead lines and underground cable circuits.

Current and future issues

2.7 The SP Manweb network is designed to comply with the supply security requirements of the Engineering Recommendation P2/6, which forms part of the electricity company's Distribution Licence. The existing 132kV network south of Legacy currently meets this requirement. However, if during a period when one circuit is out of use, the network is subjected to a fault, approximately 80,000 customers would be disconnected. To maintain the security of supply requirements for this part of the network, one third of the customers disconnected during such an event must be

restored with power within 3 hours. At present, the existing network arrangements are sufficient to meet this requirement. However, as load demand increases, the network arrangements will become insufficient.

2.8 If the system was kept in the current condition without network reinforcement, SP Manweb could not continue to meet its statutory obligations as load grows.

2.9 Works have been carried out in the area to manage the current load growth issues. Conductors capable of carrying increased capacity have been fitted to the existing overhead lines between Legacy and Oswestry. To ensure continued compliance with its statutory duty and licence obligation, SP Manweb needs to reinforce the 132kV overhead electrical network between Legacy and Oswestry.

The proposed reinforcement

2.10 The reinforcement proposal will require an investment of over £6 million to construct a third 132kV circuit between Legacy substation and Oswestry substation. This will consist of an overhead line, approximately 21 kilometres in length, with a cable section connecting each end to the substations at Legacy and Oswestry respectively. The cable sections will be terminated in the existing substations. Further works are required at both Legacy and Oswestry substations with additional investment for this associated work.

Future works

2.11 There is a requirement for refurbishment works at Oswestry substation with the replacement of existing assets. This work is in the early development stage at present and is scheduled to start in the next 3-5 years. The refurbishment works at Oswestry will be subject to a separate planning application and will be accompanied by further environmental information.

2.12 SP Manweb has recently received a signed Customer Connection agreement from Kronospan, located in Chirk, for an increase in capacity. This requires SP Manweb to look at bringing a 132kV connection from the new Legacy Oswestry reinforcement into Chirk. An environmental consultant has been appointed to carry out a routeing study to look at possible connections between the new Legacy Oswestry reinforcement and Chirk.

2.13 A future possible connection to Chirk, based on discussions previously held with the customer, was anticipated in the reinforcement project, and a preferred route for a single spur connection into Chirk was initially identified. The requirements for the connection have since changed, and will require two circuits to a new substation located within Chirk.

2.14 Consents needed for this connection will be sought under separate applications to those needed for the Legacy to Oswestry reinforcement project.

3.0 ALTERNATIVES

3.1 The decision to reinforce the 132kV electrical network between Legacy and Oswestry has been taken after careful consideration of all the available options.

Alternative grid supply points to the Welshpool and Newtown area

3.2 Reinforcement for the 132kV network in this area is necessarily obtained from the higher voltage National Grid transmission network. The high voltage networks carry electricity at 275kV and 400kV to grid supply substations where it is transformed to 132kV and enters the regional distribution networks. The regional distribution networks carry electricity to substations where the voltage is further reduced to supply business and houses.

3.3 The two nearest grid supply substations to the area requiring reinforcement are Legacy (Wrexham) and Shrewsbury. Both electrically and geographically, Oswestry is the nearest point for this reinforcement to be connected, with the more remote Welshpool and Newtown substations continuing to be fed from the existing infrastructure emanating from Oswestry. Oswestry is approximately 10km closer to Legacy (19km) than Shrewsbury (29km). As a consequence any alternative connection to Shrewsbury would be unjustifiable from both an economic and environmental planning perspective.

3.4 The regional distribution networks are arranged into groups, each group being fed from one National Grid transmission network. This is required to control fault levels and prevent unacceptably high power flows through the regional distribution networks. As a result the respective 132kV networks fed from Legacy and Shrewsbury cannot be directly connected.

3.5 Table 3.1 illustrates the alternative options considered.

3.6 A connection to Whitchurch substation would require a new 132kV line approximately 27km long which would extend the Legacy/Marchwiel/Whitchurch 132kV circuit to Oswestry. **This proposal cannot be operated in parallel due to fault level and power flow issues.**

3.7 A connection to Connahs Quay substation would require a new 132kV line approximately 50km long between Connahs Quay substation and Oswestry substation. This line would pass Legacy substation. **This proposal cannot be operated in parallel due to fault level issues.**

3.8 A connection to Crewe substation would require a new 132kV line approximately 50km long between Crewe substation and Oswestry substation. **This proposal cannot be operated in parallel due to fault level and power flow issues.**

3.9 A connection to Trawsfynydd substation would require a new 132kV line approximately 65km long between Trawsfynydd substation and Oswestry substation. This option requires a line significantly longer than the Legacy, Oswestry solution which makes it uneconomic. In addition, a major section of the proposed 132kV line would be within a National Park which is usually avoided where possible.

Table 3.1 Alternative Options

Source Substation	Option	Approx Circuit Route Length	Meets Operational Criteria?	Avoids Snowdonia National Park?	Meets Design Criteria?	Cost Estimate
Legacy GSP	Recommended	20km	Yes	Yes	Yes	£6.6M
Whitchurch	Alternatives	27km	No	Yes	No	£7.4M
Connahs Quay GSP		50km	No	Yes	No	£11.2M
Crewe		50km	No	Yes	No	£11.2M
Trawsfynydd GSP		65km	Yes	No	No	£13.4M

3.10 Alternative options such as National Grid building a 400/132kV substation close to the existing regional distribution 132/33kV substation at Oswestry and its associated 400kV overhead lines together with 132kV connections to Whitchurch, Connahs Quay, Crewe and Trawfynnydd substations have been considered. These options have been rejected on the basis of increased environmental concerns of routeing through Snowdonia National Park and the cost of greatly increased lengths of overhead line. Establishing a 400kV substation at Oswestry would require National Grid to construct a new 400kV overhead line into the Oswestry area and construct a 400/132kV substation. The completion of these works would meet the required system reinforcement, but at a higher financial and environmental cost.

Alternative options between Legacy and Oswestry

3.11 In addition to alternative strategies to reinforce the supply to areas south of Legacy, alternative methods of reinforcing the network within the area between Legacy and Oswestry were also considered.

Upgrading existing 132kV distribution lines between Legacy and Oswestry

3.12 This alternative was proposed by local residents during the project's consultation process and involved the upgrading of the existing steel lattice tower lines to carry extra wires.

3.13 The existing overhead 132kV steel lattice tower line cannot be modified to take further cables as the towers already carry the maximum number of conductors (wires). Steel lattice tower lines are designed to carry one or two circuits, each made up of 3 conductors *plus an additional earth wire*. The line that runs between Wrexham and Oswestry already carries two circuits.

Undergrounding

3.14 When considering routeing generally, where it is not possible to use an overhead line as a result of technical issues or specific constraints, undergrounding of the line may be explored as an alternative. SP Manweb is obliged to comply with the requirements of the Electricity Act 1989 to develop and maintain an efficient, co-ordinated and economical system of electricity supply. SP Manweb policy seeks to find an overhead line solution for all connections. Undergrounding is only considered where no other viable overhead options exist, and it can be demonstrated that the benefits achieved through its use will outweigh the very considerable increased costs. These costs relate to both undertaking the initial construction and the long term maintenance of these lines or sections of them.

3.15 Environmental constraints which may be sufficient to consider undergrounding as a viable option can, for example, be found in urban areas and in rural areas of the highest scenic and amenity value. Where an overhead line solution is not achievable for technical reasons the company will look to an underground cable solution as an alternative.

3.16 Whilst the main advantage of underground cable when compared to overhead line is often the reduction in effects on visual amenity and landscape character, this advantage is likely to be reduced by the effects of underground cable on ground cover and habitats. The main disadvantages of underground cable when compared to overhead line often relate to greater impact on habitats and natural heritage interests; unknown archaeology; drainage and land use for construction, in terms of the extent of the area disturbed, the equipment required and the volume of materials involved.

3.17 The relative cost for an underground circuit would typically be between 5 to 10 times that of a similarly rated overhead option. The variation would be dependent on a number of factors such as manufacturing costs, ground conditions and methods for installation.

3.18 It is accepted that underground cables provide certain landscape and visual and other benefits however, the costs associated with the design, manufacture and construction of long lengths of underground cable at 132kV are not considered an efficient and economic development of the distribution system and would not allow the company to fulfil its statutory duties under the Electricity Act.

4.0 PROJECT CHARACTERISTICS

Overhead line design

4.1 The proposed line will be constructed using wood poles with galvanised steelwork bracings supporting aluminium conductors.

Support selection

4.2 The proposed 132kV overhead line connection between Legacy substation and Oswestry substation will be of single circuit construction. A single circuit 132kV overhead line can be supported on wooden poles or on lattice steel towers (pylons). The proposed wooden pole overhead line design chosen for this route is shown in Figure 4.1: Comparison of Support Types. Steel lattice towers can be used to support either a single or double circuit. The figure shows a 'Portal' support system, which is used in the Wrexham area to support a single circuit 132kV line. The portal design is over fifty years old and is no longer in line with current standards for new construction of 132kV overhead lines.

4.3 On the basis of the requirements of the project and technical constraints it was considered that the proposed design would be the most appropriate option. It was also considered that wooden poles, which are lower in height and have a more slender and simple appearance than steel lattice towers, would be more sympathetic to the predominantly rural and well-treed landscape through which the line would be routed. The wood pole structures are approximately 16m tall, compared to a typical height of 26m for lattice steel towers traditionally used to carry 132kV lines of this capacity. In a landscape with a generous amount of mature tree cover, wood pole structures can be screened by trees, and so be less widely visible from the surrounding landscape compared to the taller towers. Wood pole structures have the further advantages that they require lesser foundations, and so construction methods can be less intrusive.

4.4 The proposed design is described below and examples of pole supports designs are shown at Figure 4.2. As this is a new technical design of overhead line, a trial section was constructed within a forestry clearance area in North Wales, to confirm both technical requirements and to facilitate an understanding of its appearance within the landscape. An overhead line using the new technical design has recently been constructed near Rhyl, in North Wales. Images of both the trial section and this recently constructed overhead line are included at Figure 4.3.

Line height

4.5 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. The overall height of the line is also dependent on a number of criteria, including geographical location, topography, height above sea level, wind & ice loading, span length and conductor type.

4.6 Pole sizes will be selected to maintain this statutory clearance and will normally be in the range of 10.5m to 16m with 2.5m in the ground. Steelwork and insulators to support the conductors will be fitted above, adding approximately 2m to the overall line height. Pole sizes may be reduced where there are short spans or they are located on a hillock, or they may be increased to provide adequate clearance for conductors over elevated land, structures or features.

Span length

4.7 The span length also depends on the same criteria as line height. The distance between supports (span length) will vary from 60m to 135m, with an average span of 80m between supports.

Supports

4.8 The line comprises a combination of four types of support or pole types:

- intermediate,
- section/angle section,
- terminal and
- failure containment.

4.9 Intermediate structures are used where the overhead line follows a straight line/alignment. Options include single pole or 'H' pole structures. Both types of structure support steelwork and insulators to carry the conductors. In general, 'H' pole structures will allow for longer spans; the single pole structure being limited to approximately 60m spans (as outlined above). The single pole supports a steel crossarm of nearly 6m overall length. The 'H' pole comprises two poles set 3m apart, with a similar overall crossarm length.

4.10 In some situations the 'H' pole structure can be secured further with stays, allowing span lengths to increase. The 'footprint' of the structure, however, will be increased as a result. In order to maintain the stresses induced in the overhead line, 'H' pole structures are required at regular intervals along a straight line. There is also a need for the failure containment arrangement at regular intervals (see below).

4.11 Angle section structures are used to enable changes of direction in the overhead line. Whilst there are minor differences in options for these structures, relating to the angle to be negotiated, all comprise 'H' pole structures, supported by a minimum of four stays (2 per pole). The maximum angle of deviation is 35 degrees.

4.12 Terminal structures are used at either end of the overhead line. The terminal structure allows the overhead line to be connected either to a cable or directly to a substation. The cable termination structure comprises a terminal pole with two smaller poles in front to support the cable termination.

4.13 Failure containment provision for conductor failure ('broken wire') situations is a requirement of European/British standard document BS EN 50431 specifying the design of overhead lines above 33kV. The failure containment structure is an 'H' pole configuration, with poles set at 6m apart, and stayed. The distance between failure containment structures is dependent upon a variety of factors, including location, local topography and alignment of the proposed overhead line.

4.14 All wood poles are fully seasoned and treated with an appropriate preservative. The galvanised steelworks associated with this support (pole top steelwork) is assembled using galvanised high tensile steel bolts with nuts and locking devices. In special circumstances, for example where space is too restricted for stay wires, wood poles may be replaced by a steel 'H' pole arrangement. This would require substantial concrete foundations.

Access

4.15 Access for construction traffic will be required and maintained to all sites during the construction phase. Future access arrangements for maintenance and fault repairs will be arranged with the relevant land owners.

Line clearance

4.16 New lines are positioned to maintain statutory clearances from buildings, structures, trees, vegetation, etc. High voltage overhead lines are constructed to conform with the Electricity Supply Industry's own engineering specifications which specify the minimum clearances that must be provided between the conductors and the ground, and between the conductors and obstacles on the ground. Safety clearances for overhead lines are specified in ENA-TS 43-8 Issue 3, 2004, and as required under the Electrical Safety, Quality and Continuity Regulations, 2002 (ESQCR).

Overhead line components

4.17 The single-circuit comprises three separate phase conductors which are attached to the pole top structure on insulators, made from porcelain, glass or modern composite materials. Insulators are fastened to the pole top steelwork. At intermediate supports the conductors sit on top of insulators. At other supports the conductors are cut and terminated on both sides of the pole with insulators placed on top of the steelwork. A fourth conductor is carried underneath the crossarm as an earth conductor. This earth conductor provides both a path for fault current and a means of transmitting SP Manweb protection and communication information via a fibre optic core. The line is earthed at every pole using a copper conductor and copper rods beneath the ground in a cross formation emanating from the foot of the pole(s).

4.18 The line design allows for several different types of conductor with varying cross-sectional areas.

Overhead line construction

4.19 Overhead power line construction follows a standard sequence of activities. For single-circuit wooden pole lines these activities include:

- Preparation of accesses
- Excavation of foundations
- Delivery of poles
- Erection of poles
- Undergrounding/deviation of lower voltage lines where necessary for safety clearances.
- Delivery of conductor drums and stringing equipment
- Insulator and conductor erection and sagging.
- Clearance and reinstatement.

4.20 Construction is anticipated to take approximately three to four weeks per kilometre.

Pre-construction activities

4.21 Prior to construction of the overhead line a precise ground survey is carried out to determine the ground profile along the centre of the line route and for 10m on either side where the ground profile slopes across the line route. This is to ensure that the location selected for poles and stays and their relationship with each other comply with the technical limits laid down for maximum span lengths, maximum sums of adjacent spans and safe clearance to live conductors in the final siting of pole. Further consideration is given to detailed environmental effects and the wishes of the landowners.

4.22 Where the route of the line passes over or in close proximity to trees that could infringe safe clearances to 'live' conductors, the trees must be felled or pruned prior to the construction of the line. In order to reduce the likelihood of trees falling and causing damage to the power line during abnormal weather conditions, the Energy Networks Association has recommended that cutting back of vegetation incorporates an allowance for growth (ENA Engineering Technical Report 132, 2006).

Land use and access during construction

4.23 Vehicular access with a maximum width of 5m has to be secured to every pole site on the route. Access routes and detailed arrangements are agreed with each landowner or occupier. Where there is no existing access available or where ground conditions prevent normal access, temporary access routes may have to be constructed. Every effort is taken to minimise land damage by using four wheel drive or tracked vehicles.

4.24 Typically access is required for an excavator (JCB and/or tracked 360 degree excavator) JCB or similar agricultural 'loader', 4x4 lorry (often with Hiab) and 4x4 pick-ups. During the stringing phase of the works, there is also a need for access for 2 tractors, 2 tensioners and 2 MEWPS (mobile elevated working platforms) and cable trailers to gain access to several locations along the line. These works are sequential and this plant will move from one location to the next until the stringing is completed.

4.25 If temporary access roads need to be installed then either a trackway system or temporary stoned access roads are technically acceptable. Any such temporary access roads are removed following construction, with no requirement for permanent access tracks to the overhead line.

4.26 Pre-construction survey is used to ensure that any new access or working areas are located within areas of least environmental sensitivity.

4.27 Access for single-circuit wood pole construction requires an area of 600m^2 at pole sites. Additionally a working area of 1000m^2 (50m x 20m) is required approximately every 2km along the overhead line to accommodate the winches required for stringing the conductors. These working areas are located depending on the availability of access and the terrain, number of angle structures and severity of angle deviations. The greater the severity of angle deviations, the closer the working areas required. These working areas will not extend more than 80m beyond the last wood pole being strung in that section.

4.28 At convenient places along the route, temporary storage areas may be required for the dispersal of plant and equipment. Identification of temporary storage areas is undertaken to minimise any potential environmental effects. It is anticipated that

temporary storage areas will primarily be within farmyards, subject to agreement between the contractor and the landowners.

Wood pole erection

4.29 The erection of wood poles requires excavation to allow the pole brace blocks and/or steel foundation braces to be positioned in place. Each support's earth mat is installed, comprising two earth conductors being laid at the base of the pole in an 'X' arrangement horizontally, at about 600mm deep. Earth rods are inserted vertically along the route of these conductors.

4.30 The excavation is then backfilled and consolidated in layers, normally with the original materials. Topsoil is reserved for the top layer and any surplus subsoil or rock is removed from the site.

Wood pole conductor stringing

4.31 Once all poles within the section of line under construction have been erected, all poles are fitted with insulator supports. Running blocks are fitted to the top of the insulator support and the conductors are fitted using the following techniques.

4.32 Drums of conductor and a tensioner with a hydraulic brake are located at one end of the line section, with the pulling winch at the other. The conductor is joined to a single, heavy-duty pilot wire and drawn through the section, one conductor at a time, under constant tension. During stringing radio communication is maintained between the operators of the pulling winch, the tensioner, hydraulic brake and intermediate observation points so the pulling can be stopped if problems arise. By using the 'Continuous Tension Stringing' method the conductors are held aloft at all times and do not touch the ground or any other structures.

4.33 Overhead line conductors are usually erected from one end of the line, in short sections (dependent upon the terrain and complexity of the design). Temporary stays will be required along the line to balance the conductors as the build progresses to the other end. These stays will be installed and removed along the length of the line as the individual sections are completed.

4.34 Erection is completed with agreed reinstatement of the ground and access routes taking place.

Transport of materials

4.35 During construction the wooden poles are transported on general purpose 4 wheel drive cross-country vehicles which have incorporated lifting devices.

4.36 Drums of conductors are delivered as close as possible to the angle or tension pole sites from which the conductors are pulled. If necessary tractors adapted to carry such loads are used to transport drums to the pole sites.

4.37 Special plant is available if there are any requirements for special precautions to be taken during construction of the line due to local environmental conditions or hazards.

Staff and vehicle numbers

4.38 It is envisaged that the overhead line works will be undertaken by a team of approximately 12 staff using the vehicles identified above and a transit van or similar to transport the staff to site.

4.39 The overall number of vehicle movements on the public highway during the construction period will be limited. In the context of the vehicle movements already present in the general area, no formal assessment of any potential effects arising from the vehicle movements associated with the reinforcement line construction has been undertaken, as the vehicle numbers are appreciably too limited to give rise to any significant traffic effects.

Noise

4.40 During construction contractors would 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 activities or items of plant, as outlined in BS5228: 1984. Noise levels generated during construction of the wood pole line are likely to be low.

Crossing existing lines

4.41 It will be necessary to cross existing overhead lines to achieve the most favourable or environmentally acceptable route or, where practicable, to maximise the distance from dwellings. The crossing of lines may cause temporary interruptions to supply while the works are being carried out. Crossing of lines will therefore be programmed at times when existing lines can be temporarily taken out of service to minimise the disruption to existing customers.

4.42 Statutory clearances must be maintained between live conductors of the existing line and the conductors of the new line and pole stay wires used in new pole construction. These are generally maintained by keeping separation distances between lines, including where lines run in parallel.

Crossing/paralleling roads, railways, waterways and other services

4.43 Where the proposed line crosses roads, railways, and other electricity lines or telephone wires, certain precautionary works have to be completed prior to the commencement of conductor stringing. Scaffolding and nets would normally be erected over major roads and railways to enable the conductors to be pulled out unhindered.

4.44 Where the proposed distribution line crosses navigable rivers and underground pipelines, all requirements of the appropriate authority would be adhered to, both at the design stage when locating individual poles and ensuring minimum clearances are provided, and at the construction stage by complying with relevant codes of practice, specifications and procedures.

4.45 Where the proposed line crosses rivers, the conductors will be strung across without the need to access the water or river banks. To enable conductor stringing, a pilot wire will be fired across from one bank to the other, with conductors subsequently pulled over under tension. The conductors will not touch the water during this operation. It will not be necessary to construct a safety net (skycradle) across the watercourse.

Construction or dismantling in 'Sensitive Areas'

4.46 SP Manweb has consulted extensively with environmental agencies concerning the matters of construction and/or dismantling in or near sensitive habitats and conservation areas. The company has in the past prepared method statements which were issued to contractors for use in environmentally sensitive sites to address issues of habitat, archaeology, designed landscapes and historic structures. This practice would continue for this project and the method statement would be rigorously applied.

Programme

4.47 Whilst this form of wood pole overhead line is relatively new and has only been constructed in two locations to date, it is expected that, with a staff of approximately 12, the construction of the overhead line will take approximately 3 to 4 weeks per kilometre. The anticipated construction period is 20 months.

Control of environmental effects during construction

4.48 An Environmental Management Plan (EMP) will be produced to ensure that due cognisance is taken of the potential impact of the development on the environment and to outline the means by which the effects of the works are to be minimised. The document will be read in conjunction with SP Manweb's Construction, Health, Safety and Welfare requirements. The EMP will help control and guide the working practices used during the construction of the development, and will be reviewed and amended as necessary throughout construction. The document will also incorporate Natural England, Countryside Commission for Wales, Environment Agency, English Heritage and Cadw guidelines by reflecting current best practice in protecting the environment during the works.

4.49 A mitigation schedule for this project will be included within the EMP, together with other guidance and requirements to provide best practice environmental management. The mitigation schedule provides a summary of all the mitigation measures proposed within the environmental statement, and is presented in Chapter 25: Mitigation Schedule.

4.50 One of the key measures for control of environmental effects during construction is environmental awareness training of the contractor's workforce prior to works commencing on site. Information regarding presence of sensitive sites and species, and the importance of implementing mitigation measures, will be given via a series of 'Toolbox Talks' by specialists in ecology and archaeology.

Maintenance

4.51 In general a distribution line requires very little maintenance. It is regularly inspected to identify any unacceptable deterioration of components so that they can be replaced. Experience indicates that a new overhead line of this type would require refurbishment after approximately forty years, depending upon the severity of pollution and local weather conditions.

Underground cabling

4.52 Cable sections will be installed at either end of the overhead line to connect the circuit to the substations at Legacy and Oswestry. Wherever possible the cables will be installed in the public highway.

4.53 The underground cables will be formed of cross linked polyethylene (XLPE), which is chemically inert and does not contain any fluids.

Cable installation in private land

4.54 Cables will be laid typically at a depth of 1m below ground level in a trench typically 1m wide. Conductors will be contained in separate polyethylene ducts.

4.55 Topsoil excavated from the cable trench will be stored separately from other material from the trench and would be stored separately local to the trench. Excavated topsoil would be used to complete the backfilling once the cable has been laid initial backfilling taken place. During the operation to lay the cable suitable crossing points over the cable trench would be provided as necessary to ensure access to properties local to the trench is maintained.

4.56 The underground cable would be protected by concrete tiles laid at such a distance above the cable as to ensure, so far as reasonably practicable, that any person inadvertently excavating the ground above the cable would receive a warning of its presence. The cable route would be indicated by above-ground markers located at the centre of the cable trench and which would be placed at field boundaries to indicate the cable route. Such markers would be located so as not to interfere with normal farming activities.

4.57 It is expected that the underground cable would intersect with existing underground services at some point, such as water mains and sewage pipes. The normal procedure in such cases is to provide a deeper trench for the underground cable and tunnel under the existing services. Excavation and reinstatement local to existing services would be carried out with due care.

4.58 Once the cable is laid, no maintenance would be required. However, in the event that the cable is damaged or a fault occurs it may be necessary to expose the cable to carry out a repair. At the end of the working life of the underground cable it would be decommissioned.

Cable installation in the public highway

4.59 All works would be agreed in advance with the relevant highway authority. Prior to any works on the public highway, appropriate warning signage and barriers would be erected. All existing services would be located and their positions marked. Procedures for working near to statutory undertakers equipment would be followed.

4.60 The underground cable would be drawn through pre-laid ducts. The ducts are usually made of PVC and surrounded by at least 150mm of concrete, dependent on ground conditions.

4.61 Excavated material from the trench would generally be removed promptly. An appropriate trench support system may be required if the excavation depth exceeds 1.2m. During excavations it may be necessary to install temporary bridging across excavated trenches.

4.62 Where reinstatement of the highway is necessary, the selection of materials, correct depths of backfill and surface courses and compaction layers would be those specified in HAUC Specification for Reinstatement of Openings in Highways June 2002 and subsequent update notices. All reinstatement works would be completed to

the satisfaction of the highway authority. Notices indicating the presence of the underground cables will be prominently displayed local to the cable route, e.g. on road lighting standards.

Substation works

4.63 Works to connect the Legacy to Oswestry 132kV circuit to the existing distribution network will be carried out at Legacy Grid and Oswestry Grid substations. These works will require the installation of additional equipment at the existing substations. At Legacy, cabling and jointing will be required within the existing equipment bays. The works will involve a very minor extension to the substation at Oswestry. The extension is within SP land ownership and on operational land which is covered by General Permitted Development rights.

5.0 ROUTE SELECTION PROCESS

Overview

5.1 This section explains the processes of route selection and the method applied for the assessment of the likely significant effects of the proposed distribution line. The overall aim is to provide a systematic account of the process in the identification of a proposed route. There are four steps to this process: identification of project characteristics; preparation of an environment and development inventory; route selection and route assessment.

5.2 Following the decision to adopt wood poles for this route, extensive routeing studies have been undertaken as described to identify the optimum route between the substations to minimise the length of the route and therefore the cost and environmental footprint, whilst also respecting the constraints identified through the EIA process.

Project characteristics

5.3 In order to identify the potential effects on people and the environment the technical characteristics of the project are set out in detail in Chapter 4: Project Characteristics. The construction, operation, maintenance and repair of the distribution line are described.

5.4 Many environmental effects are only associated with the construction phase of the distribution line, including access provision and general disturbance. However, once operational, the distribution line will require periodic maintenance and inspection which may also result in adverse environmental effects.

5.5 Environmental effects may be associated with the actual ground area required for a wood pole support, clearance requirements for wood pole foundations, which could disturb archaeological remains, sites of nature conservation, wildlife or other significant environmental features. Distribution lines may also have less direct environmental effects, for example on bird flight paths.

5.6 The assessment of effects is undertaken once a proposed route for the distribution line has been selected.

The approach to route selection

5.7 SP Manweb's approach to routeing is based on the principle that the major effect of an overhead distribution line is its visual intrusion and that the degree of visual intrusion can be reduced by careful routeing, for example by utilising topography and trees to provide screening and backgrounding and by seeking to retain appropriate distance from settlements and viewpoints. In addition, routeing also takes account of other environmental considerations by seeking to avoid the most sensitive and valued natural and man made features.

5.8 The SP Manweb approach is based on published and established practice for route identification. The approach taken is iterative and the steps taken may be revisited several times before a balance is achieved between environmental, technical and economic considerations which require professional judgement to be utilised to balance the factors. Consultation with statutory and non-statutory consultees is carried out throughout the process. Wider consultation is held when a preferred route

has been selected, through publishing a Consultation Document and public exhibitions.

5.9 The approach to route selection is summarised in the flow diagram Figure 5.1: The Route Selection Process (adapted from *Strategic Routeing and Environmental Impact Assessment for Overhead Electrical Transmission Lines* R. Marshall & R. Baxter, Journal of Environmental Planning and Management, 45 (5), 2002) and has the following steps which are then described in turn below:

- Objective of route selection
- Established practice for overhead transmission line routeing
- Determination of likely effects
- Routeing considerations/collection of background information
- Routeing strategy
- Development of route options
- Evaluation of route options
- Selection of the preferred route
- Modification of the preferred route
- Selection of the proposed route

The objective of route selection

5.10 The primary objective of route selection is to identify a technically feasible overhead distribution line route between two specific points (substations) which minimises disturbance to people and is consistent with SP Manweb's statutory duty to maintain a coordinated, efficient and economical system of electricity distribution..

Established practice for overhead line routeing

5.11 Broad principles for overhead line routeing were formulated by the late Lord Holford, Professor of Town Planning, University College, London in 1959 and published by the Royal Society of Arts. The Rules, originally intended for the guidance of those responsible for lattice steel tower line routeing, remain the starting point for routeing electricity transmission lines in the UK. The National Grid Company (NGC) reviewed the Holford Rules in 1992 and added supplementary notes of clarification, which were endorsed in a subsequent decision of the Secretary of State. Guidelines have also been produced by the Forestry Commission in 1989 for routeing of overhead power lines. These relate primarily to forest areas. National Grid produced further guidance on route selection in 1997.

5.12 Current routeing practice followed by SP Manweb is derived from the Holford Rules and NGC supplementary notes. Scottish Hydro-Electric Transmission Limited (SHETL) reviewed and expanded on the Rules, particularly to address Scottish circumstances (SHETL (2004) Approach to the Routeing of High Voltage Steel Lattice Tower Transmission Lines in Scotland). For this study, these notes on the Rules have been amended where reference is made to designations, in order to relate to England and Wales. The principles relating to routeing of steel lattice tower transmission lines are considered applicable to routeing of smaller scale, wood pole mounted overhead lines.

5.13 The Holford Rules are outlined below. Supplementary guidance is contained within Appendix 5A.

The Holford Rules

5.14 'Rule 1: Avoid altogether, if possible, the major areas of highest amenity value, by so planning the general route of the line in the first place, even if the total mileage is somewhat increased in consequence.

5.15 Rule 2: Avoid smaller areas of high amenity value or scientific interest by deviation, provided this can be done without using too many angle towers, ie the more massive structures used when lines change direction.

5.16 Rule 3: Other things being equal, use the most direct line, with no sharp changes of direction and thus fewer angle towers.

5.17 Rule 4: Choose tree and hill backgrounds in preference to sky backgrounds wherever possible; and where the line has to cross a ridge, secure this opaque background as long as possible and cross obliquely when a dip in the ridge provides an opportunity. Where it does not, cross directly, preferable between belts of trees.

5.18 Rule 5: Prefer moderately open valleys with woods where the apparent height of towers will be reduced, and views of the line will be broken by trees.

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

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

Determination of likely effects

5.21 From experience across the electricity industry it is recognised that an overhead distribution line is a large linear feature that is likely to affect, to varying degrees:

a. visual amenity
b. the landscape
c. nature conservation (flora and fauna)
d. agriculture
e. archaeology
f. cultural heritage
g. recreation
h. tourism.

5.22 The scale of a distribution line relative to objects in close proximity, e.g. houses and trees, is such that the major effect is usually the effect on visual amenity and landscape character. A distribution line may also have an effect on the environment through which it passes as a result of disturbance during construction works and maintenance operations during the life of the line.

Routeing considerations and collection of background information

5.23 The main technical and environmental considerations which should be studied in order to route a distribution line with least visual intrusion and least disturbance to people and the environment are determined from a study of likely effects and

established routeing practice. These routeing considerations include topography, landscape character and areas of amenity value and scientific and historical interest.

Identification of study area

5.24 The first step in identifying potential route options is to identify a 'study area' for which environmental information can be gathered, consultations undertaken, routeing principles applied, and site visits undertaken.

5.25 The study area is determined primarily by the location of the two existing substations which the proposed overhead line will link. The study area is generally extended just beyond the existing substations to enable all approaches into the substations to be considered. All things being equal the shortest most direct route is considered to be the most appropriate route as the total linear length of the proposed line has the potential to cause an effect. In practise however environmental factors often form constraints to direct routeing and the study area is widened to allow for all reasonable route options to be considered. A balance needs to be struck between increasing the overall length of the line between the fixed end points (the substations) and the avoidance of the main constraints.

Desk based assessment

5.26 A desk-based assessment is initially undertaken of the study area. This includes the study of 1:50,000 and 1:25000 scale mapping; a review of published documents and publicly available information; a review of local planning documentation; and the study of aerial photography.

Consultation

5.27 Consultation is undertaken at several stages during the routeing process. Initial consultation is undertaken on the basis of the broad principles of the project requirements and based on an identified study area prior to the determination of any route option corridors. This initial consultation informs the consultees of the broad project proposals and gives them an opportunity to make comments at an early stage in the project including their views on the boundaries of the study area. It also forms an important part in gathering baseline environmental information used to inform the routeing process.

5.28 Letters were initially sent to over 50 consultees including local authorities within the study area, statutory consultees, other environmental bodies and interested parties and utility companies with potential assets within the study area. Initial meetings to discuss the proposals were also offered to the Local Planning Authorities and the key statutory consultees. A list of consultees is included in Appendix 1A.

Collation of baseline information

5.29 The baseline information is collated onto a geographical information system and a review of all environmental information gathered is undertaken to identify the principal constraints and key issues in routeing a new overhead line through the study area.

5.30 Broadly, the information collated relates to development and planning allocations and proposals; landscape character and features including designations; visual receptors; transport and infrastructure; topography; woodland; nature conservation; archaeology; recreation and tourism; and agricultural land quality. Information relating to former, active and future mineral sites and allocations; existing and potential landfill

and reclamation sites is also collected. A review of all collated information is included in the Study Area Inventory in Chapter 7.

5.31 Considerations which are likely to constrain routeing are mapped together on a 'Constraints Map', which is a key part of the routeing process. The landscape character of the study area is mapped separately. In general, visibility of the route options (excluding vegetation) is also mapped and compared. In this instance, scheme design details and preliminary site visits established that this would not be a useful aid to route identification. This is partly because of the relatively small scale of the proposed support structures (wood pole), which means that they are not generally visible above mature trees or from great distances. It is also due to the nature of the landscape of this particular study area, which predominantly comprises rolling topography and scattered mature trees and woodland blocks combining to prevent long-distance views.

Routeing strategy

5.32 Following collation of baseline environmental information, routeing considerations and established practice for line routeing are used to develop a 'routeing strategy' which establishes considerations used to identify broad corridors (routeing issues) and those which are used to modify routes within corridors (deviation issues). Routeing issues are generally of a strategic nature and extensive in area; deviation issues tend to be of local importance and smaller in scale.

5.33 In this study a two-stage approach was adopted because of the scale of the study area, and the complexity of landscape character and pattern within the area. A first, strategic stage identifies broad corridors within the study area and evaluates key environmental constraints to determine the preferred broad corridor option. This is followed by a revisiting of the routeing strategy to determine routeing issues and deviation issues within the selected corridor. This refinement is tailored specifically to the nature of constraints within the preferred broad corridor. Identification of detailed route options within the preferred broad corridor is followed by their comparative evaluation to determine a preferred route option.

Relative importance of environmental issues

5.34 The main effect of an overhead line is widely acknowledged to be visual. For this reason information relating to topography, landscape character, designated or valued landscapes, dwellings and public viewpoints are given high consideration in the review of environmental information. These factors are considered to be strategic constraints in the initial routeing process. Factors such as tree and woodland removal required for routeing a proposed overhead line also need to be considered as strategic constraints *(routeing issues)* as they have visual implications.

5.35 Environmental considerations such as ecological and archaeological features are taken into consideration with known valued or designated sites avoided where possible in the routeing process. The scale or extent of the feature can be of relevance in this context. Designations covering a large geographical area are generally considered strategic constraints, whilst smaller areas can be addressed through deviation of the route (and are therefore not key constraints to overall routeing).

5.36 Environmental effects are also associated with the ground which the overhead line crosses including the support siting and foundation construction, line-oversailing and

required clearances and the effects associated with the construction phase and the future maintenance of the line.

5.37 In accordance with current best practice in routeing, areas of highest amenity value require to be established on a **project by project** basis (note on Rule 1). Chapter 8: Broad Route Options, and Chapter 9: Detailed Route Options, set out the hierarchy of environmental constraints employed at broad corridor and detailed route option stages respectively, prior to route comparisons. These are specifically tailored to both the characteristics of the study area and the nature of the proposed overhead line.

Development of route options

5.38 The identification of route corridors is focused on planning and environmental issues with only preliminary regard given to access, technical and engineering constraints and considerations. For example, the presence of existing overhead lines of lower voltage is not considered a routeing constraint. Similarly no consideration is given to land ownership at this early stage, with landowner liaison undertaken by SP Manweb following the determination of the preferred route option.

5.39 The route of the line must be continuous and as a consequence the environmental advantages of routeing in one area may be offset by the disadvantages of routeing through an adjoining area.

Evaluation of route options

5.40 The broad route options require initial evaluation to identify options which provide a technically feasible overhead line route between two specific points, minimise disturbance to people and are consistent with SP Manweb's statutory duty to maintain a coordinated, efficient and economical system of electricity distribution. Route options were developed according to the routeing strategy; a second application of the broad routeing principles establishes the relative importance of environmental issues by reference to the constraints map and assessment criteria. The options which perform poorly in this initial evaluation are rejected. The remaining route options are then further refined and re-evaluated.

5.41 The route selection process is an iterative process with each stage requiring a greater level of detail of analysis, assessment and review.

5.42 Site visits and refinement/review of collated information enables each route option to be continually refined and developed. During this stage route options may be rejected, modified or studied in further detail. The process is flexible in nature and is responsive to information built up during the feasibility and routeing study.

Selection of a preferred route

5.43 After the comparative evaluation of route options, a *preferred* route option is selected. The consideration of the environmental effects undertaken at this stage has been carried out to enable the identification of potential routes, an evaluation and comparison of these routes, and the justification for selection of a *preferred* route. Consultation is carried out at this stage by publishing a Consultation Document and holding public exhibitions.

Modification of preferred route and selection of **proposed** route

5.44 The *preferred* route is subject to further evaluation following responses received during consultation and may be further modified to take direct account of comments received. Specific local issues are considered during the detailed design of the line which may result in minor local deviation. At this stage the *preferred* route becomes the '***proposed*** route'.

5.45 The ***proposed*** route is then subject to a detailed environmental assessment to determine and quantify its likely effects on the environment. During this 'environmental assessment process' further modifications may be made to the ***proposed*** route and preliminary measures identified to reduce or remedy adverse effects. An Environmental Statement is prepared for the ***proposed*** route option.

5.46 The Environmental Statement forms part of the application for consent. During determining the application, there are opportunities for interested parties to make representations to the Secretary of State for DECC.

6.0 ASSESSMENT OF EFFECTS: ENVIRONMENTAL IMPACT ASSESSMENT

Regulatory requirements

6.1 The EIA Regulations implement within the UK the requirements of European Community Directives 85/337 and 97/11 (EEC, 1985; EC, 1997) on the assessment of the effects of certain private and public projects on the environment in relation to overhead lines. Schedules 1 and 2 of the Regulations set out which projects should be subject to Environmental Impact Assessment. The Secretary of State can provide a screening opinion as to whether or not EIA is required when the project falls below the threshold for mandatory EIA.

6.2 Under the provisions of these Regulations, the preparation of an Environmental Statement is mandatory for an electric line installed above ground with:

> *(a) a voltage of 220 kilovolts or more, and;*
> *(b) a length of more than 15 kilometres, the installation of which (or the keeping installed of which) will require a section 37 consent under the Electricity Act 1989 (Schedule 1.2).*

6.3 As the proposed Legacy to Oswestry reinforcement is over 15 kilometres in length, an Environmental Statement is mandatory, and no formal screening opinion was sought from the Secretary of State.

6.4 SP Manweb's proposals for complying with its Schedule 9 duty (Electricity Act 1989) are included within this Environmental Statement which will accompany its application for consent to the Secretary of State for DECC.

6.5 Regulation 4(1) of the 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:

6.6 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.

6.7 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.

6.8 Where significant adverse effects are identified, the Environmental Statement must include a description of **mitigation measures** envisaged.

Environmental baseline

6.9 A description of the existing environment is given in Chapter 7: Study Area Inventory and accompanying Figures 7.1-7.12 inclusive. The information already obtained at the route selection stage is supplemented with more detailed information for the proposed route.

Assessing the nature and significance of an effect

6.10 The EIA Regulations state that "The specified information (to be included within the environmental statement) is… (c) a description of the likely significant effects, direct and indirect, on the environment of the proposed development"(Schedule 3). The subsequent clause in Schedule 3(d) states that "where significant adverse effects are identified… a description of the measures envisaged to prevent, reduce any significant adverse effects" is required. The Regulations require a distinction to be drawn between those effects which are 'significant adverse' and those that are merely 'adverse'.

6.11 Assessment of whether the effect of the proposed overhead distribution line on any particular topic is likely to be adverse or beneficial in nature is a matter of professional judgement, applied on a case-by-case basis.

6.12 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.

6.13 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.

6.14 These categories apply equally to both adverse and beneficial effects. Any effect of the proposal judged to be either major or moderate will be considered to be 'significant' within the terms of the Electricity Works (EIA) Regulations. Any effect judged to be minor would not be considered as significant.

Mitigation

6.15 SP Manweb, as holder of a statutory licence to supply electricity within the UK, is required to undertake reasonable mitigation. This duty is prescribed in Schedule 9 of the Electricity Act 1989.

6.16 Schedule 9 (para 3(1)) requires that the holder:

- Shall have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiological features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest, and

- Shall do what he reasonably can to mitigate any effect that the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.

6.17 Through the evolution of the development proposals, SP Manweb has been mindful of its obligation under the Act and has sought to implement mitigation measures and strategies within the overhead line proposal which reduce the effects upon the landscape and expected receptors.

6.18 Mitigation is defined here as "measures envisaged through the consideration of alternatives, physical design, project management or operation to prevent, reduce and where possible offset any significant adverse effects on the environment."

6.19 Mitigation has been considered as an integral part of the overall design strategy of the overhead line, not just 'add-on' measures to ameliorate significant environmental effects. SP Manweb has attempted to adopt a positive and pro-active approach whereby mitigation has been assessed and considered at all stages of the project (environmental constraints, initial and ongoing design, predicted construction method and predicted operation method). The final design of the overhead line has therefore evolved over the project development cycle as described, systematically being optimised in response to increasing knowledge of the site and potential environmental effects. This process of evolution of the design has seen the proposed route evolve from an original alignment through a number of revisions in response to concerns expressed by consultees and studies being undertaken for the environmental assessment.

6.20 The hierarchical approach toward mitigation (prevent, reduce, offset) has been first to avoid any significant effects through the overall design of the overhead line and disposition of its elements, and subsequently to mitigate (on-site) through careful micro-routeing of the overhead line route and its required infrastructure.

6.21 In addition, SP Manweb has sought to reduce any identified effects, or where this has not been possible to offset the effects. This has been achieved by measures to minimise effects at source (i.e. altering and refining the proposed routeing), abatement (i.e. by removing the site infrastructure away from sensitive species and habitats during detailed design of the line) and through the use of appropriate construction methods.

6.22 Also incorporated, where appropriate, are monitoring programmes to ensure that the project and any mitigation measures perform as required.

6.23 The mitigation proposals are broadly described in Chapter 11: The Proposed Route, and more specifically within each of the assessment chapters, and are brought together within Chapter 25: Mitigation Schedule.

Environmental issues to be considered

6.24 Table 6.1 identifies those effects which are likely to be significant, and those not likely to be significant but which merit consideration in the Environmental Statement. The proposed method of impact assessment is also outlined. Further detail is provided within Appendix 1C: Scoping Report and within individual topic sections of the environmental impact assessment.

Table 6.1: Potential Significant Environmental Effects and Proposed Method of Impact Assessment

Landscape and Views	
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; effects on the social and cultural aspects of landscape
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 Landscape and Visual Impact Assessment (2002) The Countryside Agency Landscape Character Assessment Guidelines (2002) Shropshire County Council Landscape Assessment Shropshire Historic Landscape Characterisation data 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 Loss of vegetation to allow clearance for power lines Fragmentation of hedges to allow access 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 Disruption to bat foraging and flight lines Spread of nutrient rich dust from arable land could adversely affect priority habitats and waterbodies
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 & working areas Crossing watercourses

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 Consult historic records 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.) Regulations 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 '*Guidelines for Baseline Ecological Assessment*' (Institute of Environmental Assessment, 1995). The detailed methods for evaluation of impact significance follow IEEM '*Guidelines for Ecological Impact Assessment in the United Kingdom'* (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 *'Guidelines on Ecological Impact Assessment in the United Kingdom'* (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) Shropshire Botanical Society Shropshire Badger Group Shropshire County Bird Recorder & County Mammal Recorder
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 Water bodies
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-routeing Restrictions on angling Disruptions to tourist routes Effects on the setting of tourist destinations e.g. National Trust sites, historic parks and gardens, Shropshire Union Canal (Llangollen branch)
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 alterative 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.
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 Release of materials from disturbance of contaminated land (historic 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 useage • 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) Effects on future electrification of rail line
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 Health Protection Agency (HPA)(formerly National Radiological Protection Board) field strength guidelines on level for human exposure.
Mitigation Measures	Follow current advice of Government and HPA. Avoid any potential audible noise effects by routeing away from inhabited property. Department of Business and Regulatory Reform(Radio Investigation Service)
Sources of information	HPA and Government advice

Aspects not included in scope

6.25 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

6.26 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

6.27 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. Underground cable type will be Cross Linked Polyethylene (XLPE), which is chemically inert and does not contain fluids, so the risk to groundwater will not arise.

Dust

6.28 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.

Consultations on scope of assessments

6.29 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. Viewpoints and photomontage locations for visual impact assessment have been discussed and agreed with the relevant local planning authorities, Natural England and CCW.

7.0 STUDY AREA INVENTORY

7.1 In this section, information on landform, landscape character, land use, planning designations, future proposals and other relevant information is considered with a view to identifying the principal considerations and key issues in the routeing of the proposed 132kV distribution line.

7.2 This information has been assembled under the following sub-headings:

- Study Area
- Settlements and Infrastructure
- Planning Context and Development Proposals
- Topography and Woodland Cover
- Agriculture
- Landscape Character
- Landscape Designations
- Nature Conservation
- Archaeology and Cultural Heritage
- Recreation and Tourism
- Mineral Resources

7.3 This information was originally presented within a Consultation Document on the Preferred Route, published in February 2007. In preparation of the Environmental Statement, information has been updated, for example where planning policies have changed, and refined, particularly in the immediate vicinity of the Proposed Route.

Study area

7.4 The area for which environmental information was assembled is illustrated on Figure 7.1: Study Area.

7.5 The study area covers an area of approximately 19km north-south by 11km east-west. The southern edge of Wrexham forms the northernmost extent, with Oswestry, located 18km to south, forming the southernmost extent. The A483/A5(T) forms a direct link between these two border towns and runs approximately down the centre of the study area. The study area extends eastwards towards Erbistock and Overton and westwards beyond Trevor and Cefn Mawr.

7.6 The study area was largely determined by the location of the two existing substations which the proposed 132kV line will link. Legacy substation is located 4km to south west of Wrexham to the north of Rhosllanerchrugog and Oswestry substation is located on northern edge of the built development of Oswestry. The study area extends approximately 1km beyond the existing substations to enable all approaches into the substations to be considered. The eastern and western limits of the study area were defined by higher ground and steep valley topography to the west and by distance to the east, whereby there were no overriding environmental factors which required the routeing of a line further east.

Settlements and infrastructure

7.7 Figure 7.2 illustrates the main settlements and pattern of infrastructure. The study area is predominantly rural, bordered by the large settlement of Wrexham to the north and town of Oswestry to the south. A series of smaller settlements are located in the northwestern part of the study area. These settlements, Rhostyllen, Rhosllanerchrugog, Johnstown, Ruabon and Cefn-Mawr, form an almost continuous band of developed land along the boundary of the foothills of the Clwydian range and undulating lowlands to the east. South of the River Dee settlements tend to be more distinct and of a smaller size (Chirk, Weston Rhyn, St Martin's and Gobowen).

7.8 Main areas of settlement have been defined through interpretation of boundaries of built development shown on 1:50,000 scale OS plans and extending over an area of 0.5km^2. This is imperfect as it does not identify very dispersed settlements but gives a good indication of the pattern of settlement.

7.9 The main transport corridor through the area follows a broadly north-south alignment and comprises the A483(T)/A5, together with the main line rail connection between Wrexham and Oswestry. This corridor is also occupied in its central part by the Shropshire Union canal (Llangollen branch). The canal crosses the southern part of the study area in a northwest to southeast alignment, crosses the Ceiriog and Dee alongside the rail line, and occupies the Vale of Llangollen in the west.

7.10 Main roads linking to the A483(T)/A5 corridor generally provide east-west connections (A539, A495, A5). These routes are supplemented by a dense network of narrow minor lanes, which are particularly tortuous and winding in the Dee and Ceiriog valleys.

Planning context and development proposals

7.11 The following appraisal of planning context includes a summary of English and Welsh planning guidance and policy hierarchy of planning guidance and development plan policies that are of relevance to the proposed development. The details of guidance and policies are presented in a table in Appendix 7A.

<u>UK energy policy</u>

7.12 The key national policy document of relevance to this development is the UK Energy White Paper: Meeting the Energy Challenge. This was published in May 2007, replacing the 2003 Energy White Paper. It sets out a framework for action to address the challenges of climate change and secure energy supplies. The four key goals of UK energy policy, established in the 2003 Energy White Paper, are reiterated, including '*to maintain the reliability of energy supplies'.*

7.13 The Government Statement of 21st July 2005 regarding energy infrastructure upgrades (titled: Renewable Energy Statement of Need for Transmission System Upgrades) sets out Government policy with regard to energy infrastructure. The statement focuses primarily on renewable energy, but considers energy infrastructure as a whole, as follows:

> '*The provision of energy infrastructure is part of a delivery system that provides an essential national service…. New energy infrastructure projects may not appear to convey any particular local benefit and may indeed have adverse local effects, but they do provide crucial national benefits, which all*

localities share. In particular, projects will usually add to the reliability of national energy supply, from which every user of the system benefits.'

7.14 The policy outlined in the statement:

'*is intended to provide assistance by being* ***a material consideration of significant weight in planning decisions on energy infrastructure'****.*

7.15 Energy policy is a reserved function that is not devolved to the Welsh Assembly Government (WAG).

National guidance (England)

7.16 National policy advice is issued as central government guidance in the form of Planning Policy Guidance Notes (PPGs) and their replacements Planning Policy Statements (PPSs). The PPGs and PPSs that are of most potential relevance to the proposed development options include PPS1: Delivering Sustainable Development; PPS7: Sustainable Development in Rural Areas; PPS9: Biological and Geological Conservation, PPG13: Transport, PPG15: Planning and the Historic Environment; and PPG16: Archaeology and Planning, PPS25: Planning and Flood Risk.

National guidance (Wales)

7.17 Current land use planning policies of the Welsh Assembly Government are contained in Planning Policy Wales (PPW), published in March 2002, and Minerals Planning Policy Wales (MPPW), published in 2001. PPW gives guidance on the preparation and content of development plans and advice on development control decisions and appeals. . PPW is supplemented by a series of Technical Advice Notes (TANs) and circulars, MPPW by Minerals Technical Advice Notes (MTANs). Together the PPW, TANs and circulars comprise national planning policy. The TANs that are most potentially relevant to the proposed development options are: TAN 5: Nature Conservation and Planning, TAN 6: Agricultural and Rural Development, TAN15: Development and Flood Risk, and TAN 18: Transport.

7.18 The Wales Spatial Plan, published in 2004, and its 2008 update, is a strategic guidance document which sets out a vision for the spatial development of Wales over then next 20 years. It is a material consideration for local planning authorities in developing their plans and making planning decisions. There are five Wales Spatial Plan themes:

- Building sustainable communities
- Promoting a sustainable economy
- Sustainable accessibility
- Valuing our environment
- Respecting distinctiveness.

Regional guidance

7.19 At a regional level in England, policy advice is presented in Regional Planning Guidance Notes (RPGs) and their replacements, Regional Spatial Strategies (RSSs), issued by the Secretary of State. The Wales Spatial Plan is divided into geographic areas. In relation to the statutory land use planning system, the area strategies provide general locations within which the appropriate regulatory framework, which is likely to be Local Development Plans, can shape final determinations.

West Midlands Spatial Strategy, RSS11 Phase One Revision, January 2008

7.20 The West Midlands Spatial Strategy, RSS11, (formerly known as RPG 11) covers an area from Staffordshire in the north to Warwickshire and Worcestershire in the south and from Shropshire in the west to the east of Birmingham City. It was published by ODPM in June 2004 and guides growth and development in the region up to 2026. Following publication of the Phase One Revision in respect of the Black Country sub-region, a revised WMRSS was issued in January 2008. Guidance contained in RPGs/RSSs is primarily used to inform the preparation of local authority development plans and local transport plans.

7.21 The vision for the West Midlands presented within the West Midlands Spatial Strategy is *'one of an economically successful, outward looking and adaptable Region, which is rich in culture and environment, where all people working together, are able to meet their aspirations and needs without prejudicing the quality of life for future generations'*.

7.22 The spatial strategy is a series of strategic objectives and associated strategic policies (Appendix 7A) supported by topic specific policies all of which have been developed to achieve the vision of the RSS. One of the spatial strategy's objectives which is seen as a core element in the achievement of sustainable development and the implementation of the Spatial Strategy and Regional Vision is:

- *'To ensure the quality of the environment is conserved and enhanced across all parts of the Region'*.

Oswestry and the surrounding area to the north and east are identified in the RSS as within the Rural Regeneration Zone.

North East Wales – Border and Coast Area (Wales Spatial Plan 2008 update)

7.23 The vision for North East Wales is: *'An area harnessing the economic drivers on both sides of the border, reducing inequalities and improving the quality of its natural and physical assets'*

7.24 Key elements are:

- strengthening key hubs as a focus for investment
- strong, sustainable communities outside the hubs to provide locally accessible jobs and services
- developing sustainable accessibility between hubs, towns and rural parts of the area
- improving the quality and diversity of the economy
- developing the skills and education of the workforce
- promoting sustainable development. The need to protect and enhance the natural and built heritage is paramount, along with the need to address climate change.

7.25 A framework for action within the region is set out under each of the five Wales Spatial Plan themes (see Appendix 7A for relevant extracts)

Development plans

7.26 The study area under consideration for the route of the proposed overhead line is contained within the administrative areas of Shropshire County Council, Wrexham County Borough Council and Denbighshire County Borough Council. Within Shropshire the study area covers land contained within two districts, North Shropshire and Oswestry. The planning policy documents listed below are being

reviewed under the Planning and Compulsory Purchase Act, 2004. In England, this Act established a new planning policy framework in the form of Local Development Frameworks. These are in the early stages of preparation, starting with Statements of Community Involvement and Options and Core Strategy documents. In Wales, the equivalent policy documents are emerging in the form of Delivery Agreements and Local Development Plans.

Shropshire and Telford and Wrekin Joint Structure Plan 1996 – 2011 (Adopted November 2002)

7.27 The Planning and Compulsory Purchase Act (2004) abolished the system of local plans and structure plans. Whilst a few of the policies have been 'saved' until replacement policies can be completed, the majority of environmental policies have not been saved, but are now adequately covered within the West Midlands RSS, or by national planning policy guidance/statements.

Wrexham Unitary Development Plan 1996-2011 (Adopted February 2005)

7.28 The Wrexham UDP covers the administration area of Wrexham County Borough Council. In 2006 Wrexham Council began preparation of Wrexham Local Development Plan, which will be a long-term land use and development strategy covering the period up to 2021, focused on achieving sustainable development. The plan is at the pre-deposit consultation stage, with the Preferred Strategy Consultation Draft issued in 2007. Once adopted (anticipated 2010) the LDP will replace the Unitary Development Plan.

7.29 Wrexham Council has approved a series of supplementary planning guidance (SPG) documents which set out detailed advice on the way in which Development Plan policies will be applied. SPG is a material consideration in the determination of planning applications for development. Of relevance to the proposed overhead line are the Wrexham Biodiversity Action Plan (published March 2002) and Wrexham LANDMAP SPG (adopted March 2007).

Denbighshire Unitary Development Plan 1996- 2011 (Adopted July 2002)

7.30 This plan provides the strategic and detailed policy framework within which provision will be made for development and conservation needs. The plan states that development should seek to be sustainable, making the best use of resources by protecting landscape character, biodiversity and the best and *(most)* versatile agricultural land. Following recent changes made by the Welsh Assembly Government to the planning system in Wales, the Council have commenced work on the Denbighshire Local Development Plan, which, once approved will provide the principal policy framework for all land use decisions requiring planning consent in the county.

North Shropshire Local Plan 2000 – 2011 (Adopted December 2005)

7.31 Sustainability is the underlying theme of the Local Plan and four of the plan's objectives aim to achieve this. Objective 2 in particular, aims to maintain the special character and natural resources of the District, its settlements and countryside and to maintain and enhance the best landscape and features of nature conservation value amongst others. The policies of the Local Plan will continue to apply until December 2008, and thereafter may be 'saved'. The Government has agreed to merge the County, Borough and District Councils in Shropshire to form a single unitary council, which will start work on 1 April 2009. Before this date, Councils will continue to take

decisions on planning applications in their individual areas, continuing to apply their own adopted 'saved' local plan policies.

Oswestry Borough Local Plan 1996-2006 (Adopted July 1999)

7.32 The Oswestry Borough Local Plan sets out the Council's Planning Strategy for the future development of the Borough of Oswestry. It contains planning policies and proposals to guide and control new development between the period of 1996-2006. The Local Plan's Strategy is to create a sustainable pattern of development which promotes community development and safeguards the environment for the present and future populations. The Oswestry Borough Local Development Framework: Core Strategy Issues and Options Report was available for public consultation in 2006. Comments have been submitted by SP Manweb seeking policy guidance for electricity infrastructure upgrades.

7.33 Preparation of Oswestry Borough LDF was suspended in 2007, following the decision to merge councils in Shropshire to form a single unitary council. The majority of policies within the Local Plan have been 'saved' and will continue to apply. One exception to this, of relevance to this project, is that policy NE7 Protected Species and Habitats, is not saved, as the Secretary of State considered it was contrary to paragraph 15 of PPS9.

Shropshire Council Local Development Framework

7.34 Shropshire Council has recently published for public consultation its draft Core Strategy 'Issues and Options' document (January 2009). The Core Strategy will be the first document to be prepared as part of Shropshire's new Local Development Framework and will be the main planning policy document for the new Shropshire Council. Adoption is anticipated in 2011. The Core Strategy 'Issues and Options' sets out a range of key issues such as sustainable communities, transport and the economy that are relevant to Shropshire, and explores the various options within those issues. There is no specific reference to the electrical distribution network.

Summary of planning policy context

7.35 The table presented as Appendix 7A summarises national, regional, county and local policies that are directly relevant to this proposed scheme.

Development land allocations

7.36 A number of current development proposals for the area are outlined below and indicated on Figure 7.3 Development Allocations and Consultation Zones. For the purpose of this Environmental Statement, housing and employment land allocations contained within development plans have been considered, together with any other allocations considered to be a constraint to routeing, such as major road proposals. As proposed routes avoid urban areas, proposals related to inner urban areas have not been included. As part of the Local Development Framework process, Oswestry BC has invited expressions of interest with regard to sites to be allocated for development. No new sites have yet been allocated for development.

Housing allocations

7.37 Housing allocations identified in Wrexham UDP under policy H1 include sites at Chirk, Rhostyllen, Ruabon and Trevor. North Shropshire's local plan does not identify any allocated housing sites in rural areas (Policy H5) within the study area.

The Borough of Oswestry local plan identifies numerous sites with either outstanding planning permission or allocated for housing in rural areas (Policies H8 and H10 respectively). These are concentrated on the fringes of Oswestry, Whittington village, Gobowen, St Martin's and Weston Rhyn.

Economic development allocations

7.38 There are no employment land allocations within the North Shropshire District part of the study area.

7.39 Oswestry Borough Council allocates land at four sites within the study area for economic development (Local plan policies LE4, LE6, LE8 and LE17). Two are adjacent to the A5/B5070 junction at Gledrid roundabout (one of these being a proposed truck stop). The others are near St Martin's at Ifton Industrial Estate and Bank Top.

7.40 Wrexham UDP allocates employment land under policy E1. Approximately half of the allocated land is within Wrexham Industrial Estate (65 ha), which is outside the study area. Only sites on the edge of settlements within the study area have been mapped. These comprise:

- Acrefair: Wynnstay Industrial Estate (site 22)
- Johnstown: Vauxhall Industrial Estate (site 24)
- Rhosllanerchrugog: Coppi Industrial Estate (site 32)
- Rhostyllen: Croesfoel Industrial Estate (site 33)
- Rhosmedre: Plas Kynaston (site 34)
- Wrexham: Technology Park (site 38)
- Wrexham: Ruthin Road Development Area (site 39)

Safeguarded areas

7.41 On the northeastern outskirts of Oswestry, a strip of land is safeguarded under local plan policy TR9 for a new road between eastern Oswestry/Harlech Road and the Whittington Road.

7.42 The Highways Agency has advised that consideration should be taken of the possibility of widening the A5 to dual carriageway at some future date. Subsequent correspondence has established that proposed widening of the A5 is proposed further south than the study area (Highways Agency, 30.10.08).

7.43 The Civil Aviation Authority has identified an aerodrome just east of the settlement of Chirk (1 nautical mile east).

7.44 National Grid Gas (formerly Transco) has provided information regarding high pressure and intermediate pressure gas pipelines in the area. The medium and low-pressure distribution network is concentrated in built-up areas. However, there are instances where mains are routed across open land linking up small villages.

Topography and woodlands

Topography

7.45 The study area lies within a transitional zone between mountainous land of the Clwydian Range and Berwyn Mountains to the west and lower land to the east associated with the River Dee floodplain (see Figure 7.4). The area includes the eastern slopes of Esclusham Mountain and Ruabon Mountain, foothills of the

Clwydian Range, which rise to approximately 500m AOD. Foothills of the Berwyn Mountains located within the study area include Selattyn Hill and Baker's Hill, which rise to 371m and 350m respectively. Land height varies from over 400m AOD in the extreme north-west to below 25m AOD in the east. The transition from foothill slopes to rolling lowlands occurs at around 100 – 120 m AOD. (Within the study area, the A483(T)/A5 road corridor follows this change in topography.)

7.46 The key topographic features within the study area are the deep valleys of the rivers Dee and Ceiriog (a tributary of the Dee). These rivers flow in a generally west to east direction through the centre of the study area.

7.47 The land in the eastern part of the study area is gently undulating lowland, situated at around 100m AOD, and dotted with small ponds. It is bisected into northern and southern parts by the River Dee. Here the river occupies a narrow valley with steeply sloping valley sides. Numerous minor watercourses flow in either a southerly or northerly direction to join the Dee, creating a local landscape of several smaller side valleys and intervening low ridges.

7.48 In the western part of the study area, the Dee and Ceiriog have formed deeply incised valleys in the east facing slopes of the Berwyn foothills. The Ceiriog occupies a narrow valley floor, whilst the Dee meanders through a wider (up to 1 km), flat-bottomed valley - the Vale of Llangollen.

7.49 North of Legacy and immediately south of Wrexham, the River Clywedog flows in an easterly direction, ultimately joining the River Dee north of Bangor-on-Dee. In the southern part of the study area, the River Perry originates west of Selattyn Hill, and flows in a south-easterly direction towards the River Severn. These two rivers have not created incised valleys, and form much less prominent physiographic features within the landscape than the Dee and Ceiriog.

Woodlands

7.50 Small woodlands are scattered throughout the study area (see Figure 7.4), as are numerous mature hedgerow trees, giving an overall well-wooded appearance to the landscape. Larger areas of woodland are concentrated in the Dee and Ceiriog valleys (and associated side valleys), on the Berwyn foothills, and in parkland landscapes. The least wooded part of the study area is the south-eastern part, in the vicinity of St Martin's and Dudleston Heath.

7.51 Ancient woodland is defined in England and Wales as land continuously wooded since 1600. Identification of an area of woodland as being of ancient origin does not bring statutory protection; however, local authorities generally seek to protect them, in accordance with national and local planning policies. This applies particularly to ancient semi-natural woodland, which are areas of woodland that have never been cleared or replanted, as these are considered a valuable and irreplaceable natural resource.

7.52 The Ancient Woodland Inventories for Shropshire and Clwyd (which cover Wrexham CBC) indicate that the majority of ancient woodlands are located in the Dee valley, although there are also some large ancient woodland areas in the vicinity of Erddig Hall, south of Wrexham.

Agriculture

7.53 Figure 7.5 indicates the classification of agricultural land capability for the study area. The classification is based on the potential productivity, cropping flexibility and ease of management of an area. Grade 1, 2 and 3a represent best and most versatile agricultural land. It is government policy, as set out in Planning Policy Statement 7 (PPS7) to have a general presumption against development in these areas. If any such land were disturbed by scheme proposals it should be restored to full agricultural production without loss of quality.

7.54 Land north of Oswestry substation is identified as grade 3 in the Provisional Agricultural Land Classification (surveyed pre 1976), although DEFRA has indicated (23/07/03) that more recent surveys of agricultural land capability indicate areas of Grade 2 and 3a close to Oswestry substation.

7.55 The Agricultural Land Classification for Wales indicates that the majority of land within the Welsh part of the study area is of grade 3 or poorer quality. However this classification does not distinguish between Grades 3 and 3a.

Landscape character

7.56 Landscape character is a result of interaction between physical factors (e.g. geology, soils, vegetation, climate), natural processes (e.g. erosion, flooding) and human influence (e.g. agriculture, forestry, settlements, industry and developments).

7.57 The landscape character of England has been mapped on a broad scale as part of the countryside character programme of England, prepared by the Countryside Commission (now Countryside Agency), English Nature (now Natural England) and assisted by English Heritage. This map identifies the parts of the study area within England as being part of Character Area 61: Shropshire, Cheshire and Staffordshire Plain, to the east and Character Area 63: Oswestry Uplands, to the west. As the character areas are further defined and subdivided by a more detailed, county level landscape character assessment, they have not been mapped here. However, the key characteristics of these broad areas are described below.

7.58 Similarly the landscape character of Wales has been mapped on a broad scale by Land Use Consultants, in association with CCW. The information is still draft, with anticipated completion March 2009. Forty nine distinct landscape character areas are mapped. The parts of the study area within Wales are within Character Area 13: Deeside and Wrexham, and Character Area 14: Maelor Saesneg. As the character areas are further defined and subdivided by a more detailed, county level landscape character assessment, they have not been mapped here. However, the key characteristics of the areas are described below.

7.59 Wrexham's LANDMAP Landscape Assessment was completed in 2004. It has been incorporated with Wrexham's UDP in the form of Special Planning Guidance (SPG), adopted March 2007, and will form a material consideration in determining planning applications. The SPG provides a consolidated and simplified version of the Wrexham LANDMAP 2004, which it supersedes in all but the evaluation scores for each aspect and background to the LANDMAP process.

7.60 The southern part of the study area lies entirely within the county of Shropshire. In 2006 Shropshire County Council published 'The Shropshire Landscape Typology', which subdivides the county into 27 landscape types (plus an 'urban' category). For each type, the key characteristics are identified, together with a description of the broad character. Distribution of the type within the county is defined, and a visual example of each type provided. An Historic Landscape Character assessment of Shropshire has been integrated into the Landscape Character Assessment. The results were used as the basis for defining the Landscape Types.

7.61 For the purpose of the routeing study, draft landscape character areas and descriptions were provided by Shropshire County Council in 2003. The boundaries of these areas do not differ substantially from those of the published landscape types, although the names of character types have changed from geographic locations to generic landscape types (e.g. 'SP 43 St Martin's' has become a part of the 'Principal timbered farmlands' landscape type).

Countryside Commission Character Area 61: Shropshire, Cheshire and Staffordshire Plain

7.62 The key characteristics of this area are:

- Extensive gently rolling plain interrupted by sandstone ridges, the most prominent being the Cheshire Sandstone Ridge
- A unified rural landscape, with strong field patterns, dominated by dairying which merges with more mixed and arable farming to the north and south-east
- Mosses, meres and small field ponds are scattered throughout. Subsidence flashes occur to the east of the Cheshire Plain
- Boundaries are predominantly hedgerows, generally well-managed, with abundant hedgerow trees which are mostly oak. Metal railing fences occur locally on estates
- Woodlands are few and are restricted to deciduous and mixed woods on the steeper slopes of sandstone ridges, and some of the wetter areas. There are also locally extensive tracts of coniferous woodland. The plentiful hedgerow trees, particularly in Cheshire, give the appearance of a well-wooded landscape
- Large farmsteads regularly spaced throughout with dispersed hamlets and few market towns
- Buildings are predominantly red brick with warm sandstone churches and, in the national park, occasional very distinctive black and white half timbered buildings
- Extractive industries generally small-scale but widespread – sand, gravel, salt, sandstone, peat.

Countryside Commission Character Area 63: Oswestry Uplands

7.63 This is a small area of flat-topped, steep-sided hills, and narrow, wooded valleys. It forms the eastern edge of the Clwydian Hills, extending from mid-Wales and bringing a distinctively Welsh character into the western edge of Shropshire. The key characteristics are:

- Intricate pattern of flat topped hills and steep-sided valleys
- Welsh place names, settlement character and farming pattern
- Pasture fields, copses, hedgerow oaks, valley-side woodlands and overgrown hedges forming a strong landscape pattern, with fine views
- Farms and cottages in undressed local stone

- Limestone quarries of many sizes, many now overgrown
- Prominent hill forts
- Parks on lower slopes around Oswestry.

Draft Wales Landscape Character Area 13: Deeside and Wrexham

7.64 *Deeside and Wrexham* forms a long and broad valley to the north eastern edge of Wales, with the character area containing the confluence of the Alun and Dee Valleys and opening into the broad Dee estuary to the north east, and extending as far as the beaches of Talacre, on the North Wales Coast. Connah's Quay, Mold and Wrexham impart a settled and often industrial character to much of the central and lower parts of the character area. A small part of the Clwydian Range AONB extends into the westernmost part of the area.

Draft Wales Landscape Character Area 14: Maelor Saesneg

7.65 *Maelor* is part of the Clwyd/Shropshire/Cheshire/Staffordshire Plain, adjoining the English border and being defined to the west by the sandstone geology of *13. Glannau Dyfrdwy a Wrecsam/Deeside and Wrexham*. The southern part of the character area incorporates the Maelor Saesneg Landscape of Special Historic Interest.

Wrexham LANDMAP SPG and Shropshire Landscape Typology

7.66 The northern part of the study area (Wrexham CBC) has 19 Landscape Character areas. The southern (Shropshire) part of the area is subdivided into 10 Landscape Types. Figure 7.6 identifies the Landscape Character Areas of Wrexham and the Landscape Types of Shropshire within the study area. Figure 7.7 illustrates various character areas/types with photographs. The key characteristics of these areas and types are identified in Table 7.1 below.

Table 7.1: Landscape Character Areas (Wrexham) and Landscape Types (Shropshire)

(Refer to Figure 7.6)

WREXHAM COUNTY BOROUGH COUNCIL		
CODE	**CHARACTER AREA**	**LANDSCAPE CHARACTER TYPE**
1B	RUABON and ESCLUSHAM MOUNTAIN	UPLAND MOORLAND
	Unenclosed and uninhabited upland moorland plateau seen from the Wrexham lowlands, valued for its scenery, dry heath vegetation, wildlife and archaeological remains. • Upland moorland plateau • Forms smooth unbroken skyline viewed from Wrexham and Cheshire plain • Seen as relatively wild and natural • Tranquil and remote • Significant weather and seasonal changes • Of high value for wildlife • Important archaeological remains • Of value for informal recreation • Most is open access land under the Countryside and Rights of Way Act 2000.	
3	BERWYN FOOTHILLS and CEIRIOG FOREST	UPLAND ENCLOSED PASTURE

WREXHAM COUNTY BOROUGH COUNCIL		
CODE	**CHARACTER AREA**	**LANDSCAPE CHARACTER TYPE**
	Exposed slopes or lower spurs of the Berwyn Mountains, with pasture and forest, enclosing the Ceiriog Valley. The Ceiriog Forest is a typical upland commercial forestry plantation contrasting strongly with the surrounding open areas. • Exposed upland ridges or plateau rising to the Berwyn Mountains • Tranquil and remote • Large regular fields, some bordering on moorland • Land use mainly sheep grazing or forestry • Outstanding distant views • Isolated stone-built farms • Important for informal recreation	
4A & B	CEIRIOG VALLEY	UPLAND VALLEY
	Scenic, tranquil and steep-sided valley enclosed by spurs of the Berwyn mountains, with hillside farms, wooded and farmed slopes, and small villages along the River Ceiriog. • Scenic rural valley enclosed by upland ridges • Sense of tranquillity and remoteness from urban areas • Mosaic of pasture, woods and traditional small farms • Small, irregular fields with hedgerows and hedgerow trees • Villages along valley bottom, with widespread use of stone for buildings • Old quarries linked by tramway • Area of value for informal recreation and low-key tourism • Important area of Welsh culture.	
5A	CHIRK ESTATE TO FRONCYSYLLTE	BORDER HILL SLOPES
	East facing slopes dominated by the strategically sited Chirk Castle and Estate, with the landscape reflecting the historical tensions between upland and lowland, Wales and England. • Hill slopes facing settlement and industrial developed lowlands • Castle and estate parkland, woodlands and farmland • Gateway to Ceiriog valley and Vale of Llangollen • Traversed by Offa's Dyke • Focus for tourism.	
5B	EASTERN SLOPES OF RUABON MOUNTAIN	BORDER HILL SLOPES
	East-facing slopes of Ruabon/Esclusham Mountain below the moorland edge, with a landscape of relatively unspoilt pastoral farmland, small farms, woodlands and reservoirs. • Scenic area between moorland and developed lowlands • Small irregular fields on east facing slopes, used for pasture • Sharp boundary between farmland and moorland • Linear woodlands and reservoirs in minor valleys • Remnants of historic mining, although the area appears undisturbed • Isolated farms and very small hamlets.	
7A	CHIRK	URBAN VILLAGES – UPLAND/LOWLAND EDGE
	An area on the Welsh-English border, and on historic transport routes, with strongly contrasting rural, suburban and industrial elements. • Industrial structures within a wider rural setting visually dominating much of the area and beyond • Canal (a major tourist attraction) road and rail corridors pass through the area • Chirk is within a shallow valley with open views to hills • Contains nationally important viaduct and aqueduct historical landscape features • Village lies between the historic estates of Chirk Castle and Brynkinalt.	
7B	CEFN MAWR	URBAN VILLAGES – UPLAND/LOWLAND EDGE

WREXHAM COUNTY BOROUGH COUNCIL		
CODE	**CHARACTER AREA**	**LANDSCAPE CHARACTER TYPE**
	Set on a ridge overlooking the scenic Dee Valley at the entrance of the Vale of Llangollen, this area, including Cefn Mawr, Acrefair, Plas Madoc and Rhosymedre, has a significant industrial heritage. • Fragmented area of urban villages and open space with a legacy of industrial land uses • Densely built hillside village of Cefn Mawr set on a ridge with good views over the Dee valley • Chemical industries • Restored farmland to north, and much green space within settlements • Important area for industrial archaeology • Need for sympathetic regeneration without loss of heritage.	
7C	RHOSLLANERCHRUGOG – RHOSTYLLEN, RUABON - PENYCAE	URBAN VILLAGES – UPLAND/LOWLAND EDGE
	Closely-built former mining communities with a rich cultural heritage, located on the lower slopes of Ruabon mountain, and distinguished by the widespread use of local Ruabon red brick. • Rural and urban areas affected by history of mining and quarrying • Villages (Rhos, Penycae, Rhostyllen, Ruabon) characterised by high density and use of Ruabon red brick • Prehistoric military border area – Gardden hill fort and Offa's Dyke • Much accessible natural greenspace forming ecological network, including woodland and grassland habitats of high value • The A483 and railway follow the eastern edge of area.	
7D	WEST WREXHAM RIDGES AND VALLEYS	URBAN VILLAGES – UPLAND/LOWLAND EDGE
	A complex area of former mining villages, industry, farmland and woodland in a landscape of distinct ridges and valleys which are aligned towards Wrexham town. • Mixed rural and urban village character • Strong NW-SE orientation, with alternating ridges and valleys • Hilltop villages separated by woodland, former industrial land and farmland • Widespread use of local Cefn sandstone in older buildings, and distinctive stone walls • Changing landscape as post mining restoration and regeneration continue • Variety of wildlife habitats including small but important wetlands • Border area – Offa's Dyke and site of prehistoric hill fort.	
8	GWERSYLLT, LLAY, GRESFORD, BORRAS	URBAN VILLAGES - LOWLAND
	A valuable lowland plateau of well-drained agricultural land, sand and gravel extraction, and commuter villages with a mining history, which surrounds Wrexham to the north and east. • Gently undulating lowland plateau formed by glacial sands and gravels • Prominent escarpment at Marford • Fast-changing area with active sand and gravel quarries and large areas of restored land • Unusual and distinctive landscape of kettle holes of glacial origin south of Gresford • East and west areas separated by River Alyn valley • Good well-drained agricultural land – few ponds and ditches • Growing commuter villages, originally mining communities • Border area – crossed by Wat's Dyke.	
9A	CLWEDOG VALLEY, PLAS POWER AND BERSHAM	WOODED VALLEY – RURAL/URBAN

WREXHAM COUNTY BOROUGH COUNCIL		
CODE	**CHARACTER AREA**	**LANDSCAPE CHARACTER TYPE**
	Small wooded valley from Wrexham to Minera, providing woodland walks with industrial archaeology and nature conservation interest, historically linked to Plas Power estate and Bersham iron works. • Cut-off areas of countryside, and wooded valley to the east of Wrexham town • Woodlands of high nature conservation value • Country parks at Nant Mill and Minera • High potential for recreation, linking town and country • Heritage centre and ironworks at Bersham • Plas Power estate adjoining Clywedog Valley, surrounded by a magnificent stone wall.	
9D	DEE VALLEY - FRONCYSYLLTE TO NEWBRIDGE	WOODED VALLEY – RURAL/URBAN
	Spectacular section of the River Dee at the entrance to the Vale of Llangollen, including the Pontcysyllte Aqueduct and Newbridge viaduct. • Key section of Dee Valley with historic canal, rail, road and Offa's Dyke crossings • Enclosed valley with scenic views to west • Rural land uses but close to industry and settlements • Important river, grassland and woodland habitats • Focus for tourism and recreation • Outstanding industrial archaeology.	
10	WREXHAM TOWN	URBAN RESIDENTIAL/COMMERCIAL
	Wrexham is a large thriving historic market town set on a lowland plateau, forming a regional and local centre with strong cultural traditions. • Historic market town, regional centre and transport nexus • Border town with Welsh and English influences • Largest town in North Wales, with many of the functions of a city • Located on a lowland plateau surrounded by farmland, historic estates and sand quarries • St Giles church tower is a landmark seen from hills and lowlands • Linked to ex-mining communities as well as agricultural lowlands • Extensive post-war residential estates.	
11	WREXHAM INDUSTRIAL ESTATE	URBAN INDUSTRIAL
	Wrexham industrial estate, separate from Wrexham town because of its origin as a World War II ordnance depot, forms a large 'island' of development within the countryside, its light-reflecting buildings visible from the hills. • Extensive area of mixed manufacturing and business uses • Located on site of WWII munitions depot, formerly farmland • Visible from afar, many of the buildings dwarfing the human scale • Very valuable species rich grassland, scrub and wetland habitats • Major focus for employment, separate from Wrexham town.	
12A	DEE/CEIRIOG WOODED VALLEY	WOODED VALLEY - RURAL
	Scenic wooded valley of the River Dee and tributaries, with spectacular road, rail and canal crossings but limited public access. • Steep sided and enclosed sections of the River Dee and River Ceiriog valleys, shared with North Shropshire • Dominated by broadleaved and coniferous woodlands, with some pasture land • Spectacular road, rail and canal crossings enhance the scenic qualities and provide views • Strong seasonal contrasts • Much in estate ownership with limited public access.	
13A	WELSH MAELOR	AGRICULTURAL LOWLANDS

WREXHAM COUNTY BOROUGH COUNCIL		
CODE	**CHARACTER AREA**	**LANDSCAPE CHARACTER TYPE**
	Attractive undulating lowland farmland to the south of Wrexham town and west of the River Dee, containing a number of large estates. • Undulating, mainly pastoral lowland farmland • Well-managed hedges with hedgerow trees and small woodlands • Historic designed estates influence a large proportion of this area • Field ponds abundant on areas with clay soils • Historic settlement pattern with remnants of medieval ridge and furrow • Erddig estate important for tourism, recreation, nature conservation and heritage • Wat's Dyke runs north-south through area • Patches of valuable semi-natural habitats, especially in Clywedog valley • Affected by urban pressures and economic changes to farming.	
13B	ENGLISH MAELOR	
	An area of undulating lowland farmland and small villages which retains evidence of historic landscapes and of alternating English and Welsh influence. • Large character area defined by strong English influence • Undulating, mainly pastoral lowland farmland • Relatively tranquil rural area • Well-managed hedges with hedgerow trees and small woodlands • Historic designed estates with the western half being a Landscape of Special Historic Interest • Field ponds abundant on areas with clay soils • Historic settlement pattern with moated settlements and remnants of medieval ridge and furrow • Patches of valuable semi-natural habitats • Current agricultural changes affecting character.	
14	RIVER DEE FLOODPLAIN	FLOODPLAIN
	Open, flat floodplain of the River Dee, across which the river meanders widely in a deep channel, with spectacular seasonal flooding in some areas. • Open flat farmland with pasture and arable use • Little or no settlement other than at Bangor on Dee • Extensive seasonal flooding • The River Dee and its tributaries are of national importance for both geology and biodiversity • The river meanders widely, forming a shifting boundary between Cheshire and Wrexham.	

SHROPSHIRE COUNTY COUNCIL	
LANDSCAPE TYPE	**KEY CHARACTERISTICS**
HIGH ENCLOSED PLATEAU	High upland plateau. Regular, planned field pattern. Relict thorn hedges. Medium to large scale landscape with open views. Dispersed settlement pattern.
WOODED RIVER GORGE	Steeply sloping valley sides. Interlocking woodlands of ancient character. Small scale, intimate landscapes with framed views. Linear shape to areas with this character.
PASTURE HILLS	Prominent sloping topography. Hedge fields with mainly ancient origins. Pastoral land use. Dispersed settlement pattern. Medium to large scale landscape with filtered views.(full text refers to small-medium scale landscapes)
PRINCIPAL TIMBERED FARMLANDS	Rolling lowland with occasional steep sided hills. Relic ancient woodland. Hedged fields with scattered hedgerow trees. Predominantly dispersed settlement pattern. Small to medium scale landscapes with filtered views.
ESTATE FARMLANDS	Mixed farming landuse. Clustered settlement pattern. Large country houses with associated parklands. Planned woodland character. Medium to large scale landscapes with framed views.

SETTLED PASTORAL FARMLANDS	Heavy, poorly drained soils. Pastoral land use. Scattered hedgerow trees. Irregular field pattern. Small to medium scale landscapes with predominantly filtered views.
PRINCIPAL SETTLED FARMLANDS	Mixed farming land use. Varied pattern of sub-regular hedged fields. Tree cover comprises scattered hedgerow and field trees. Defined by a clustered settlement pattern of hamlets and smaller villages and medium to high density dispersal of farmsteads and wayside cottages. Elements combine to create medium scale landscapes with predominantly filtered views.
LOWLAND MOORS	Flat, low-lying topography with peaty soils. Wet ditches and drains. Scattered willows along water channels, and regular estate plantations. Medium to large scale with open views. A largely unsettled landscape.
RIVERSIDE MEADOWS	Flat, floodplain topography. Pastoral land use. Linear belts of trees along watercourses. Hedge and ditch field boundaries. Unsettled.
URBAN	None defined

(Source: Wrexham LANDMAP SPG (March 2007)/ Shropshire Landscape Typology (September 2006))

Landscape designations

7.67 Designated landscapes in the study area are indicated at Figure 7.8. There are three levels of designation designed to protect areas of recognised high quality landscape: national, regional (or county) and local. Sites are designated for a variety of different purposes, and development proposals require to be assessed for their effects on the natural heritage interests which the designation is intended to protect. In England and Wales, designations of National Park and Area of Outstanding Natural Beauty (AONB) are protected by Government legislation. Areas of regional or local importance are designated by the relevant local authority.

7.68 No nationally designated areas lie within the study area.

7.69 The overhead distribution line routeing process aims to minimise visual intrusion, particularly into areas acknowledged as of high landscape quality.

Potential designation: Area of Outstanding Natural Beauty

7.70 Wrexham County Borough Council and Denbighshire County Council identify areas which they regard as being of national landscape importance, but which are not currently protected by national designation. It is possible that these areas will be designated within the current development plan period (which is up to 2011 for both Wrexham and Denbighshire). They comprise:

- Llantysilio and Berwyn Area of Outstanding Beauty (Denbighshire);
- the Berwyn Mountain Range, which includes much of the Ceiriog valley; and
- the Clwydian Range AONB may be extended to include sections of Ruabon Mountain (Wrexham).

7.71 These areas are currently protected through local designations (see below). Local Planning Policies state that development should not unacceptably harm the landscape or prejudice future designation as AONB.

Local landscape designations

7.72 Other local landscape designations are identified by planning authorities to safeguard local important areas of scenic quality from inappropriate development. They are non-statutory designations but have a valuable role in protecting local natural heritage.

Llantysilio and Berwyn Area of Outstanding Beauty (Denbighshire CC UDP Policy ENV2)

7.73 Y Berwyn is yet to be designated as an AONB although it is recognised in the Policy as a landscape of national importance and is under consideration by CCW for full AONB status. In recognition of the national landscape importance of the area is has been designated as an 'Area of Outstanding Beauty'. Development affecting the AOB *'will be permitted where it would not unacceptably harm the character and appearance of the landscape, or prejudice future designation as an AONB'.*

Area of Special Environmental Interest (North Shropshire Local Plan Policy L5)

7.74 The Dee Valley in the north-west corner of the district '*has high landscape value, a steep sided wooded valley with the river as its major feature. The northern side of the valley is included in the Wrexham UDP within a Special Landscape Area'.*

Area of Special Landscape Character (Oswestry Borough Local Plan Policy NE1)

7.75 Areas of Special Landscape Character are established in the County Structure Plan (Policy 2/13). The Local Plan defines boundaries which are shown diagrammatically in the structure plan. The ASLC within the study area is termed Northwest Uplands. The area is described as follows:

> *'Many of the most dramatic landscapes in the County are those marking the transition from lowland to upland with the hills rising to the west of Oswestry being a prime example. The area defined….includes transitional areas as well as the more rugged landscape which retains many of its traditional field patterns and a wealth of archaeological, geological and wildlife interest'.*

Special Landscape Areas (Wrexham UDP Policy EC5)

7.76 Not all of the areas indicated are individually named. The areas are defined as:

- *'upper slopes of Ruabon mountain*
- *Ffrith valley*
- *parts of the Dee valley*
- *the Ceiriog valley and*
- *pockets of high value landscape which contribute to the setting, amenity and character of local settlements, or views along main communication routes, and comprise attractive and sensitive environments in their own right. Examples include parkland and garden landscapes in the Cadw Register of Parks and Gardens of Special Historic Interest (all of which lie within SLAs),Landscapes of Historic Interest, village greens, open areas within or adjacent to built-up areas, river valleys and farmland. Development is often inappropriate in such sensitive locations and the maintenance and enhancement of the landscape quality is particularly important'.*

<u>Historic gardens and designed landscapes</u>

7.77 Registers of historic parks and gardens are compiled and maintained by English Heritage (Register of Historic Parks and Gardens) and Cadw/CCW/ICOMOS (Register of Landscaped Parks and Gardens of Special Historic Interest in Wales). These areas are not statutorily protected, although the effect of proposed

development on an historic garden or designed landscape is a material consideration in the planning system.

7.78 There are eleven Registered Historic Parks and Gardens located within the study area. These are:

- Erddig, Clwyd (grade I)
- Wynnstay, Clwyd (grade I)
- Chirk Castle, Clwyd (grade I)
- Whitehurst, Clwyd (grade II*)
- Brynkinalt, Clwyd and Shropshire (grade II*)
- Trevor Hall, Clwyd (grade II*)
- Brogyntyn Hall, Shropshire (grade II)
- Erbistock Hall, Wrexham (grade II)
- Rosehill, Wrexham (grade II)
- Pen-y-lan, Wrexham (grade II)
- Argoed Hall, Clwyd (grade II)

7.79 The Erddig estate and Chirk Castle are owned by the National Trust; the remaining parks and gardens are in private ownership.

7.80 The main landscape features of interest relating to each historic park and garden are set out in turn below.

Erddig

7.81 Erddig is situated just to the south of Wrexham, on the western edge of a bluff between the Black Brook valley to the west, and the Clywedog valley to the north. It is an outstanding example of a grand formal garden in the Dutch style, of the late seventeenth-early eighteenth century. Its main features survive unaltered, and have been well restored. Erddig Hall is a Grade I listed building, and from its west front there are fine views out over the park in the Black Brook valley. There are also significant views eastwards from the house, over the formal gardens and towards New Sontley. The two main entrances to the park, both with lodges, lie to the south-east and south-west of the house.

Wynnstay

7.82 This park, situated immediately south-east of Ruabon, is described in the Register as:

> *'an outstanding eighteenth century landscape park, one of the largest and most important in Wales. Although now cut in two by the A483 trunk road, the park still retains many of its historic features, some of which are attributed to Richard Woods and Capability Brown'.*

7.83 The Wynnstay mansion stands on a plateau to the north of the Dee valley, and from it there are fine views to the Ruabon mountains to the west and the Vale of Llangollen and Berwyn Mountains to the south. The hall is presently residential apartments.

Chirk Castle

7.84 The castle is a massive stone fortress situated on elevated ground to the north of the Ceiriog valley, west of Chirk village. The ground around it is rolling, rising to a ridge in the west, and dropping quite steeply to the Ceiriog valley on the south. The grounds are considered an outstanding example of a landscape park, partly designed by William Emes (who also designed Erddig). The park began as a small fourteenth-

century deer park, and has been wooded, cleared and replanted at various stages in its history. Of note are terraced and informal gardens, with remains from the medieval period. There are significant views to the north and east from the castle and gardens, and important views towards the castle, particularly from the north.

Whitehurst

7.85 The gardens are situated approximately two kilometres north of Chirk Castle, adjacent to the A5. They comprise a seventeenth century walled garden of Chirk Castle, including tiered curving fruit walls, gates, banqueting house and mount.

Brynkinalt

7.86 Brynkinalt, near Chirk, lies on high ground above the valley of the River Ceiriog shortly before it joins the River Dee. The estate is a large picturesque landscape park, laid out in the early nineteenth century. It is bisected by the A5. Brynkinalt Hall, dating from 1612, is grade II listed, and there are several gothic features within the estate. The English border follows the river, thus the views from the house are partly into Shropshire. The essential setting to the park encompasses the wooded Ceiriog valley to the south and east, and open land to the north.

Trevor Hall

7.87 Situated at the extreme west of the study area, Trevor Hall is situated on the north side of the Dee valley on ground sloping to the south. Primary reasons for grading are the seventeenth and eighteenth-century garden, in a fine position overlooking the Dee valley.

Brogyntyn

7.88 The park lies immediately to the north-west of the town of Oswestry, the mansion house standing in the centre of its park, and enjoying extensive views particularly out to the east. Brogyntyn Hall is grade II* listed, and there are several other listed structures associated with the estate. Castell Brogyntyn, a possible Iron Age hill fort and scheduled monument, is located within the park.

Erbistock Hall

7.89 The hall is a Georgian brick mansion situated on elevated ground to the west of the River Dee, just south of Rose Hill. The primary reasons for grading relate to a partly terraced garden, probably dating to the early eighteenth century, with well preserved, very fine yew hedging and topiary of some antiquity. The garden incorporates a well preserved early eighteenth century dovecote.

Rosehill

7.90 This is a substantial late Georgian brick house situated on elevated ground to the west of the River Dee. The primary reason for grading is the landscape park, in a picturesque location overlooking the River Dee, surviving in its entirety.

Pen-y-lan

7.91 A stuccoed and castellated house situated on high ground overlooking the Dee valley to the south. The early nineteenth century landscape park in fine, unspoilt scenery of the Dee valley, survives in its entirety and is still managed as a park.

Argoed Hall

7.92 Argoed Hall is a substantial stone house situated on the northern edge of the village of Froncysyllte, between the canal and the River Dee. There are the remains of a Victorian garden and extensive woodland grounds laid out with numerous walks on the steep slope above the River Dee and with a lake on the flood plain.

Other parklands

7.93 Several other parklands have been identified from Ordnance Survey maps (where they are identified as 'Park or ornamental grounds'). Public accessibility to these grounds has not been ascertained. The parklands are:

- Cefn Park, east of Wrexham
- Overton Lodge, near Erbistock
- Henlle Hall, north of Gobowen
- Fernhill Hall, north-west of Whittington
- Halston Hall, east of Whittington
- Hardwick, north-east of Welsh Frankton.

Evaluation of landscape quality and sensitivity

7.94 The Wrexham LANDMAP – Technical Appendices were adopted in November 2004. A summary was adopted as SPG in March 2007. The SPG provides a consolidated and simplified version of the Wrexham LANDMAP 2004, which it supersedes in all but the evaluation scores for each aspect and background to the LANDMAP process.

7.95 In addition to defining landscape character areas and types, the LANDMAP process included evaluation of the quality of each resource, or aspect, considered (the evaluation uses standardised criteria to ensure consistency and is intended to be applied on a national basis throughout Wales). Of particular relevance to this study is the evaluation of the 'Visual and Sensory Aspect' of Wrexham County Borough's landscape. The evaluation is recorded on a four point scale: Outstanding/High/Moderate/Low. Areas of the highest quality (Outstanding) are identified in Figure 7.8 and are described below.

7.96 The Erddig, Wynnstay and Chirk Estates are assessed as being of the highest quality, classified as 'outstanding' – they are all on the Cadw Register of Landscapes, Parks and Gardens of Special Historic Interest, evaluated as Grade I. However, Wynnstay's landscape quality is variable. The Dee Valley from Newbridge to Froncysyllte is evaluated as outstanding, because of the Pontcysyllte Aqueduct. It is also within the area designated by Cadw as the Vale of Llangollen and Eglwyseg Landscape of Special Historic Interest. The incised wooded lowland valleys are of very high value. The Dee-Ceiriog valley is described as verging on outstanding.

7.97 Since completion of the routeing study, further guidance on use of LANDMAP in EIA has been issued by CCW. This is considered within the assessment of landscape effects in Chapter 14.

7.98 Shropshire County Council's draft landscape character assessment (2003 draft) contained an assessment of the sensitivity of the landscape. Within the analysis of each landscape description unit (or character area) there is an assessment of visual sensitivity, inherent sensitivity of the landscape and overall sensitivity. One draft character area within the study area, SP/38 Halston Hall, is identified as having high visual and overall sensitivity, the remaining areas being of either low or moderate sensitivity. The boundaries of this area span more than one of the Landscape Types in the published Landscape Typology. This landscape of high 'overall sensitivity' is shown on Figure 7.8: Landscape Designations.

Nature conservation

7.99 The overhead distribution line routeing process aims to minimise the effect on recognised areas of nature conservation or scientific value, where possible avoiding them altogether.

7.100 In England and Wales there are three levels of designation designed to protect areas of high nature conservation and scientific interest; international, national and local, as follows:

- International designations – Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC) and Special Protection Areas (SPA);
- National designations – National Nature Reserves, Sites of Special Scientific Interest (SSSIs);
- Local designations – Local Nature Reserves, Local Wildlife Sites.

7.101 National and international designations are important material planning considerations but they do not necessarily preclude development. Development proposals much be assessed to determine what effects they would have on the natural heritage interests that the designation is intended to protect. Nature conservation designations within the study area are outlined in this section and are shown in Figure 7.9.

7.102 There are no Ramsar sites or Special Protection Areas within the study area.

Special Areas of Conservation (SAC)

7.103 Special Areas of Conservation are designated under the EC Habitats Directive. The process involves initial designation as a possible SAC (pSAC), and following submission to the European Commission these become candidate SACs (cSAC). Note that all cSACs are also designated as SSSIs.

7.104 Designation relates to habitat types and species considered to be most in need of conservation at European level (excluding birds). SACs are intended to play a key role in ensuring that rare, endangered or vulnerable habitats and species of community interest are either maintained at or restored to a favourable conservation status.

7.105 There are three SACs within the study area:

- River Dee and Bala Lake; and
- Johnstown Newt Sites (Wrexham)
- Berwyn and South Clwyd Mountains

River Dee and Bala Lake

7.106 This designation covers an area of 1308.93 hectares, 90% of which is inland water body. Within the study area, the SAC comprises the watercourses of the rivers Dee and Ceiriog.

7.107 The primary reason for selection of the site is because the waters support a protected habitat (Annex I habitat), namely watercourse(s) of plain to montane levels with floating vegetation often dominated by water-crowfoot, a plant which occurs in relatively unpolluted waters. Atlantic salmon and floating water plantain are Annex II species that are also cited as a primary reason for selection of the site. This area is considered to be one of the best in the UK for Atlantic salmon. Other species which are qualifying features for site selection include otter, sea lamprey, brook lamprey, river lamprey and bullhead.

Johnstown Newt Sites (Wrexham)

7.108 The SAC designation has been applied to the SSSI known as Stryt Las A'r Hafod (see below), but under a different name. The reason for site selection is for presence of the protected species great crested newt. The area boundaries of the SAC and SSSI are the same.

Berwyn and South Clwyd Mountains

7.109 The primary reasons for selection of this site are the protected habitats (Annex 1 habitats) of European dry heath and Blanket bog. Berwyn contains the largest stands of European dry heath in Wales, and supports the most extensive tract of near-natural blanket bog in Wales. The designation extends over some 27,200 hectares.

Sites of Special Scientific Interest (SSSIs)

7.110 SSSIs are defined in the Wildlife & Countryside Act as *'areas of land or water which are of special interest by reason of their flora, fauna or their geological or physiographical features'*. They are at the core of national and international arrangements for the protection of species, habitats and geological or geomorphological features.

7.111 The study area contains 8 SSSIs:

- Afon Dyfrdwy (River Dee)
- River Dee (England)
- Ruabon & Llantysilio Mountain & Minera
- Stryt Las A'r Hafod (Wrexham)
- Sontley Marsh (Wrexham)
- Nant-y-Belan and Prynela Woods (Wrexham)
- Shell Brook Pastures (Wrexham)
- Fernhill Pastures (Shropshire)

Afon Dyfrdwy (River Dee, Wales) and River Dee (England)

7.112 These two adjoining sites are of special interest for fluvial geomorphology, Carboniferous geology, range of river habitat types, saltmarsh transition habitats, populations of floating water plantain, slender hare's ear, sea barley, hard-grass, otter, salmon, bullhead, brook lamprey, river lamprey, sea lamprey, club-tailed dragonfly and other aquatic invertebrates.

7.113 The main channel of the River Dee lies within both Wales and England, and is notified as two separate SSSIs – the Afon Dyfrdwy (River Dee) SSSI in Wales and the River Dee (England) SSSI in England. The features for which the SSSIs are notified, in particular migratory fish, depend upon the whole river ecosystem. Salmon, otter, club-tailed dragonfly and fluvial geomorphology are of special interest in both Wales and England.

7.114 The designation includes the channel of the River Ceiriog.

Ruabon & Llantysilio Mountain & Minera

7.115 This site extends north from the Dee Valley between Corwen and Ruabon for a distance of up to 9kms. The site is notified firstly on biological grounds, for its heather moor, limestone and neutral grassland habitats and for its species interest comprising a range of upland breeding birds, rare and uncommon plants and the use of mines and caves by bats. The site is also notified on geological grounds as it contains three sites of special interest within its boundaries.

Stryt Las A'r Hafod

7.116 A composite site (total area 69.4 ha) located south west of Wrexham, of special interest for its amphibians. The waterbodies of the SSSI support one of the largest known breeding populations of great crested newt. Surrounding areas of land support a mosaic of scrub and planted trees, grassland, and tall ruderal vegetation. These form important foraging and over-wintering areas for adult and juvenile amphibians. Stryt Las is managed as a community nature park and land at Hafod is to be managed as community woodland.

Sontley Marsh

7.117 A 13 hectare site located south of Wrexham, designated for its botanical interest as one of the best wetland examples in Clwyd of the 'southern mesotrophic mire' type more characteristic of south-west Wales. The site occupies the western valley side of the Gefeiliau Brook and is characterised by extensive areas of alder carr (woodland), tall fen vegetation and herb-rich damp grassland. The major part of the site is owned by the National Trust and managed as a Nature Reserve by the North Wales Naturalists Trust.

Nant–y–Belan and Prynela Woods

7.118 The largest (35.5 ha) and one of the best examples of a woodland type largely restricted to Wales and south-west England. The part of the Dee valley in which these woods lie is generally well wooded, but most of the woodland has been affected by large scale replanting with conifers and non-native hardwoods. Nant-y-Belan and Prynela Woods thus represent a significant area of largely semi-natural woodland which occupies the northern slopes of the Dee valley and extends up tributary valleys. The woods are very variable, the majority of the area being dominated by oak, ash, Wych elm and wild cherry. Lack of grazing has resulted in a well developed understorey with hazel the dominant shrub. The herb layer is equally variable, and there are extensive flush areas within the woods. The uncommon Wild Daffodil occurs in parts of Nant-y-Belan Wood.

Shell Brook Pastures

7.119 These comprise 11 hectares of unimproved calcareous clay pastures, largely established on the steep valley side of the Shell Brook. This represents a type of habitat that survives only as isolated fragments in the Maelor. The pastures are botanically rich, the variety of plants present being enhanced by the presence of springs in the valley side and areas of marsh adjacent to the Shell Brook, together with scrub and woodland edge communities.

Fernhill Pastures

7.120 A series of traditionally managed fen-meadows situated on gently sloping ground alongside the River Perry in north west Shropshire, comprising a total of 11.8 hectares. Parts of the site support a type of fen-meadow which is characterised by an abundance of the rushes *Juncus effusus* and *J. acutiflorus*, whereas other areas are dominated by meadowsweet or by lesser pond-sedge. There has been widespread loss of unimproved wet grassland and fen meadow habitats in lowland Shropshire as a result of drainage and associated agricultural improvements. Fernhill Pastures is of special interest as the largest remaining example of these types of habitats which are now scarce in Shropshire.

Local designations

County Wildlife Sites

7.121 Spot/point locations have been provided by North Wales Wildlife Trust for 25 sites, site boundaries were provided by WCBC. Shropshire Wildlife Trust identified sixteen wildlife sites within their part of the study area. These sites are shown in Figure 7.9.

Local Nature Reserves

7.122 Local Nature Reserves are statutory designations made under section 21 of the National Parks and Access to the Countryside Act 1949 by local authorities. Natural England defines them as being 'for both people and wildlife. They are places with wildlife or geological features that are of special interest locally, which give people special opportunities to study and learn about them or simply enjoy and have contact with nature.' Oswestry Borough Council declared Ifton Meadows, an area of some 16 hectares north of St Martin's village, as a Local Nature Reserve in early 2005. Additionally, the Old Racecourse at Oswestry (SJ 2573060) is effectively treated as a Local Nature Reserve for management purposes (English Nature 22/05/03). There are no LNR's within the Welsh part of the study area.

Ancient Semi-Natural Woodlands

7.123 In England and Wales, ancient woodlands are defined as land continuously wooded since AD 1600. Ancient Woodland is divided into ancient semi-natural woodland and plantations on ancient woodland sites. Ancient semi-natural woodland is considered by the Joint Nature Conservation Committee to be a valuable and irreplaceable natural resource. The identification of an area of woodland as being of ancient or semi-natural origin does not carry any statutory force.

7.124 A UK national inventory of ancient woodland has been prepared in recognition of the importance of these areas in terms of nature conservation. Information for the study area has been received from English Nature (for Shropshire), CCW (Clwyd Inventory of Ancient Woodlands) and from Forestry Commission Wales.

7.125 Ancient semi-natural woodland is identified at Figure 7.9. Most of this woodland type, together with plantations on ancient woodland, is found in the vicinity of the River Dee valley, towards the central part of the study area.

Archaeology and cultural heritage

7.126 Today's urban and rural landscape is the product of human activity over thousands of years. There are settlements and remains of every period, from the camps of the early hunter-gatherers to remains of 20th Century industrial and military activities. They include places of worship, settlements, defences, burial grounds, farms, fields and sites of industry, in some cases forming broader archaeological landscapes.

7.127 The study area has a wide and varied archaeological and built heritage. These archaeological and historic features contribute to the social and economic prosperity of the community, as they comprise important tourist attractions and education initiatives.

7.128 Sites of archaeological and cultural importance are a finite and non-renewable resource and should therefore be protected and managed. PPG 16 sets out the government's planning policy on how archaeological remains and discoveries should be handled in the context of the development plan and development control systems.

7.129 Sites of international importance for cultural heritage may be designated as World Heritage Sites. World Heritage Site status is established through the World Heritage Convention, adopted by UNESCO in 1972. There are currently 851 World Heritage Sites, two in Wales.

World Heritage Site nomination

7.130 Pontcysyllte Aqueduct & Canal has been adopted as the UK's nomination for 2008 to the World Heritage List. UNESCO requires that both the Site and its setting are protected from any development which would be deemed harmful to its cultural significance. A Buffer Zone has been identified around the Site, designed to safeguard it, through the planning system, from inappropriate development. The Buffer Zone is drawn to incorporate all areas which contribute to the visual setting of the Site. Whilst the outstanding feature of the proposed Site is Pontcysyllte Aqueduct, the proposed Site is 11 miles/18 kilometres long from Gledrid Bridge near Rhoswiel to the Horseshoe Falls. It includes the canal, and its engineering features, remains associated with construction and historical operation, such as engineer's houses, wharves and lengthman's cottages, and the immediate surroundings of Pontcysyllte Aqueduct, Horseshoe Falls and Chirk Aqueduct. The area of the Nominated Site is 105 hectares, the Buffer Zone comprises a further 4,145 hectares.

7.131 Statutory protection of the heritage resource is afforded through Scheduled Monument, Conservation Area and Listed Building status. Further non-statutory designations of national importance include Parks and Gardens registered by English Heritage and Cadw. Further archaeological sites may also have the potential to fulfil the scheduling criteria of English Heritage/Cadw but have no formal protection.

7.132 Scheduled Monuments, Listed Buildings and Conservation Areas should not be seen in isolation. They are part of an overall heritage resource which includes their inter-relationship to each other and to the wider heritage resource including ancient woodland, areas of landscape character and historic landscapes.

7.133 The World Heritage Nomination Site and its Buffer, Scheduled Monuments, Listed Buildings, Conservation Areas and Parks and Gardens on the English Heritage/Cadw Registers have been mapped, together with areas identified on the Register of Landscapes of Special Historic Interest in Wales, produced by Cadw (see Figure 7.10).

Scheduled Monuments

7.134 Scheduled Monuments are designated under the Ancient Monuments and Archaeological Areas Act, 1979. They are defined in PPG16 as archaeological sites of national importance. Scheduled Monument Consent is required from the Secretary of State for any development affecting such a monument.

7.135 There are numerous Scheduled Monuments within the study area. The majority of these are fragmented and small in area and will therefore be considered as route deviation issues. At the strategic level, only the larger scheduled monuments, or groups of monuments, have been considered, namely:

- Offa's Dyke
- Wat's Dyke
- Old Oswestry Hill Fort
- Rhyn Park Roman Military site.
- Whittington Castle

Offa's Dyke

7.136 Offa's Dyke is a linear earthwork, believed to date from the 8th century, which roughly follows the Welsh/English border. It consists of a ditch and rampart constructed with the ditch on the Welsh-facing side. Much of the dyke is still traceable along the 80 miles from the Wye valley to Wrexham. It follows an approximately north-south alignment in the western part of the study area. The route of Offa's Dyke Path, a National Trail, does not follow the earthwork precisely within this area.

Wat's Dyke

7.137 This is a similarly constructed earthwork, and is scheduled along much of its 49 mile length. Wat's Dyke is likely to date from within the Anglo-Saxon period, perhaps built earlier than Offa's Dyke. From Mold to Oswestry the two earthworks are almost parallel, with Offa's Dyke to the west and on higher ground.

Old Oswestry Hill Fort

7.138 Old Oswestry Hill Fort is a large Iron Age fort with a series of five ramparts and an elaborate, heavily defended western entrance. It forms a prominent feature in the landscape.

Rhyn Park Roman Military site

7.139 The site is thought to have been a Roman fortress, possibly a campaign base of legionary size. There is evidence of a large fort, area estimated 19.57 hectares, dating from mid 1st century, overlain with a smaller, later fort (area 5.86 ha) on the east side. Within the later Roman Fort is the cropmark of a small native style farmstead lying close to the hamlet of Rhyn and probably post-dating the military phase. Evidence of the military site is primarily through aerial photography; it is not readily discernible from the surrounding area.

Whittington Castle

7.140 This castle is one of the few remaining Marcher Castles largely intact. Initially a medieval motte and bailey castle, it was altered in the thirteenth century with the construction of a stone keep, walls, towers and a gatehouse. The castle is surrounded by a ring of defensive earthworks. Following decay and the reuse of stone, the principal building is the gatehouse and an attached 17th Century cottage. The castle is both a Scheduled Monument and Grade I listed building, and lies within Whittington Village Conservation Area.

Listed buildings

7.141 The term building is defined broadly and can include walls, bridges and other structures. Buildings of special architectural or historic interest are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990 and are divided into three categories, Grade I, II* and II. In determining an application for development affecting a listed building or its setting, the planning authority is required to have special regard to the desirability of preserving the building or its setting, or any features of special architectural or historic interest which it possesses. Listed buildings are scattered throughout the study area. As they are small in area they are treated as route deviation issues rather than routeing considerations.

Conservation Areas

7.142 Conservation Areas are protected by statute under the Planning (Listed Buildings and Conservation Areas) Act 1990. There are no conservation areas affected by the proposed development as they are contained within settlement boundaries which have been generally avoided. In addition to five Conservation Areas within the urban fabric of Wrexham, the following Conservation Areas are located within the study area:

- Bersham
- Marchwiel
- Penycae
- Cefn Mawr
- Ruabon
- Pontcysyllte
- Overton
- Erbistock
- Chirk
- Whittington
- Oswestry.

Historic parks and gardens

7.143 Information on Historic Parks and Gardens has been included under ‘Landscape Designations’ section.

Landscapes of Historic Interest (Wales only)

7.144 The *Register of Landscapes of Historic Interest in Wales* is being compiled by Cadw, Welsh Historic Monuments, the Countryside Council for Wales and the International Council on Monuments and Sites. There are currently two parts to the Register, Part 1 being the Register of Landscapes of Outstanding Historic Interest in Wales and Part 2 encompassing landscapes of Special Historic Interest. The first part of this, covering thirty-six ‘outstanding’ landscapes, was first published in 1998, the second

part in 2001. Although non-statutory, it provides a national overview of the historic content of the Welsh landscape.

7.145 There are two identified Landscapes of Special Historic Interest on the western and eastern fringes of the study area. These are:

- Vale of Llangollen and Eglwyseg Mountain; and
- Maelor Saesneg.

7.146 The Vale of Llangollen is described in the citation as presenting '*a remarkable visual combination of stark natural landforms and ancient and modern man-made features'*.

7.147 Maelor Saesneg is described as uncharacteristic of Wales, with a historic character more typical of the English border than of Wales. Historically, the majority of Maelor Saesneg would have been subject to similar land use patterns, with a predominantly pastoral economy. The integrity of the historic landscape is best preserved in the western part of the area. In Welsh terms, the scale and survival of this remarkable medieval field and cultivation pattern make this '*a very rare and valuable landscape'* (extract from Wrexham LANDMAP June 2004).

7.148 There is no equivalent register of historic landscapes in England. The process of '*historic landscape characterisation'*, which will ultimately provide more detailed information about the character of the landscape and inform the way in which aspects of the historic landscape may be managed, is underway in both England and Wales.

Recreation and tourism

7.149 Tourism and leisure activities are considered important within the study area, which is predominantly rural. The area is generally marketed under 'Borderlands', referring to the English/Welsh border. The River Dee, with its tributary the Ceiriog, forms this boundary. The Ceiriog Valley is commonly described as 'quiet, 'unspoilt' and 'undiscovered'. This stretch of the River Dee is renowned for angling. Figure 7.11 identifies the main recreation and tourism resources of the area.

Main tourist attractions

7.150 Ancient defences are now tourist attractions, particularly fortresses such as Chirk Castle, and Offa's Dyke, along which there is a National Trail, some 177 miles long, extending from Prestatyn to Chepstow. This trail is located in the extreme west of the study area.

7.151 The Shropshire Union Canal (Llangollen branch) is identified as one of the important features of the area. In addition to forming a popular holiday route, it provides opportunities for informal recreation such as walking, fishing and canal boat rides. Trevor Wharf and Chirk Marina provide access to water-based recreation within the study area.

7.152 The Pontcysyllte aqueduct, which carries the canal in a narrow cast iron trough some 121 feet above the River Dee, is located in the west of the study area. This is a proposed World Heritage Site (see Cultural Heritage section). The canal is transported over the River Ceiriog by the Chirk aqueduct.

7.153 Two National Trust estates are located within the study area. Erddig Hall is situated immediately south of Wrexham and Chirk Castle is located several miles further south, above the northern bank of the Ceiriog valley. These estates comprise historic buildings, parks and gardens which are regularly open to the public. In addition to

providing parking and picnicking facilities for visitors, both estates have extensive parkland. Erddig parkland is managed as a Country Park.

7.154 Other historic attractions include Whittington Castle and Old Oswestry Hill Fort. Whittington Castle is located centrally within the small village of Whittington, some 5km north-east of Oswestry. The castle dates from the 13th century. Old Oswestry Hill Fort is a Scheduled Monument comprising a series of ditches and ramparts, overlying a natural hill. It was first occupied around 300 BC, and is chronicled as the birthplace of Arthur's Guinevere. English Heritage manages the site.

7.155 The A483(T)/A5, which follows a north-south alignment through the study area, is considered to be a main tourist route between England and Wales.

Recreational routes

7.156 In addition to Offa's Dyke Path, the study area is crossed by three other Recreational Paths:

- the Maelor Way
- the Clywedog Trail
- the Ceiriog Trail.

7.157 The Maelor Way, 39kms in length, follows the southern banks of the rivers Ceiriog and Dee, from south of Chirk Castle (where it connects to Offa's Dyke Path), to Grindley Brook (east of Erbistock). The Clwedog Trail (13kms) follows the River Clywedog, and links Wrexham, via Erddig Country Park to Minera Lead Mines and Country Park, on the shoulder of Esclusham Mountain. The Ceiriog Trail (23 miles) is found in the extreme west of the study area, joining Offa's Dyke Path west of Chirk Castle.

7.158 Recently (August 2008), the Wat's Dyke Way Heritage Trail has been waymarked and publicised. This 99km long distance footpath runs between Llanymynech and Holywell, where possible following Wat's Dyke. Figure 7.11 shows this route.

7.159 There are two on-road cycle routes (identified through Sustrans website) within the study area. The Ceiriog Cycle Network follows a route to the north and south of the River Ceiriog, west of Chirk. Regional Route 31 is a 28 mile signed route between Oswestry, Gobowen, Ellesmere and Whitchurch. Within the study area it utilises quiet lanes.

7.160 Wrexham local plan identifies several walking/cycling routes under development (Policy T10). These often utilize former railway trackbeds and will link outer areas/settlements with Wrexham. Within the study area these are:

- Rhos – Legacy
- Legacy – Rhostyllen
- Plas Madoc – Trevor
- Ruabon via Acrefair to Trevor.

Country parks and access land

7.161 In addition to the country park at Erddig, there are three other country parks within the study area, all within and managed by Wrexham County Borough Council. These are:

- Hafod Community Park, near Rhosllanerchrugog
- Stryt Las Park, Johnstown
- Ty Mawr Country Park, Cefn Mawr.

7.162 Hafod Community Park is being developed on the former Hafod spoil heap, and comprises some 90 acres. In addition to being a designated SSSI & SAC, the park features a substantial hill formed by the spoil heap, which offers opportunities for long distance views (to the Peak District).

7.163 Stryt Las Park is a smaller country park, also of high nature conservation value, enclosed within the urban fabric of Johnstown.

7.164 Ty Mawr Country Park, is situated on the banks of the River Dee, bounded by the Cefn viaduct, and with views out over the Vale of Llangollen and the Pontcysyllte Aqueduct. It provides access to the Offa's Dyke Path, the Llangollen canal and the Dee valley countryside.

7.165 Whilst country parks generally have some form of visitor facilities, there are other areas, identified on Ordnance Survey maps as 'Access Land', which are open to the public by permission of the owners, often the Forestry Commission, National Trust or Woodland Trust. Such areas are found in the Dee, Ceiriog and Clywedog valleys within the study area.

Angling

7.166 Angling is an important outdoor pursuit within the study area, particularly relating to the River Dee and its tributary, the Ceiriog. The River Dee near Erbistock is described as '*classic salmon water'* (Wirral Game Fishing Club website). A number of angling clubs control waters throughout the study area.

7.167 In addition to the rivers, which are fished for salmon, grayling, chub, gudgeon, pike, perch and trout, there are several fishing lakes which support angling clubs. The majority of these are stocked with trout. These include:

- Big Ben Pool, near Middle Sontley
- Clay Pit Pool, near Sontley
- Wem Fishery, near Rhostyllen
- Chirk Lakes at Glyn Ceiriog
- Llyn Pen y Cae, near Rhostyllen
- Pen y Cae Reservoir
- Ty Mawr Reservoir, Bronwylfa.

7.168 Overhead power lines can constitute a potential danger to anglers, and so popular fishing waters can constitute a constraint to routeing.

Other recreational facilities

7.169 Within the study area there are several golf courses, campsites or caravan sites, gardens open to the public and farm parks or craft centres. These have been identified from OS maps and during field survey, and are shown on Figure 7.11. The Oswestry Showground is also identified. This is situated in close proximity to Oswestry substation, at the junction of the A5/A495.

Mineral resources

7.170 As mineral resources are finite it is important that potential resources of economic importance are not sterilised by development but are safeguarded for the future. Whilst presence of mineral resources would not preclude the siting of an electricity distribution line, their presence may form a consideration when selecting route

alignments. Similarly, tips and landfill sites (often former mineral workings and quarries) would not form a constraint at the strategic level, but there would be a general presumption to avoid such sites.

7.171 To assist in the safeguarding of mineral resources, the Town and Country Planning Act 1990 makes provision for the designation of areas known to contain potential mineral resources other than coal. The Mineral Consultation Areas are defined following discussions with the minerals industry and the District Planning Authorities. The Coal Authority defines Coal Consultation Areas.

7.172 Within the English part of the study area, these consultation areas are defined by the Shropshire, Telford & Wrekin Minerals Local Plan 1996-2006 (adopted April 2000). Wrexham County Borough Council has provided details of mineral sites within the Welsh part of the study area. These are illustrated on Figure 7.12.

7.173 The main mineral resources within the study area relate to a belt of carboniferous rock which occurs in a broadly north-south aligned central strip, and to sand and gravel deposits within glacial drift, which mantles the North Shropshire Plain. The carboniferous rocks have given rise to a series of small coalfields, including the Oswestry coalfield. Although there are no active coal workings, much of the area is affected by shallow, medium and deep former colliery workings. Brick clay and fire clay also occur within the carboniferous strata; there are active and former claypits within the study area.

7.174 In 2005, a late update to the Wrexham Local Plan identified areas where mineral resources will be safeguarded from non-mineral development in order to prevent the sterilisation of unworked deposits (Policy MW9). It also identified minerals buffer zones around existing minerals sites (Policy MW11), where new development which would be sensitive to any adverse impact of mineral working will be resisted. Wrexham Council officers have indicated that they consider a 132kV distribution line to be development which would generally be resisted under these policies. Whilst these constraints were not considered necessary to avoid in routeing, they have been mapped and considered in route option evaluation.

Landfill and land reclamation

7.175 Information on landfill sites within the study area has been provided by Wrexham CBC and extracted from the Shropshire Waste Local Plan 2002-2014. The majority of landfill sites are closed, with the exception of Pen y Bont, situated in a large meander of the River Dee, and Preeshenlle landfill, just north of Gobowen. Sites are shown on Figure 7.12. Further information regarding historic landfill sites in the vicinity of the proposed route, east of St Martin's, was provided by the Environment Agency when consulted on the scope of the environmental impact assessment (2008). This information has been added to the environmental inventory.

8.0 BROAD ROUTE OPTIONS

8.1 Following the process outlined in Chapter 5: Route Selection Process, broad route options have been identified which connect Legacy and Oswestry substations. These are: Option 1 to the east of the A483(T)/A5; Option 2 to the west of the A483(T)/A5; Option 3 following the main north south road corridor; and Option 4 paralleling the existing 132kV overhead line. These broad route options are shown on Figure 8.1.

8.2 Information gained during initial consultation, collation of the baseline information and through initial site visits was used to carry out a preliminary assessment of these options. This information was used to identify potential routes or key constraints to routeing within these broad corridors.

8.3 Only strategic level environmental constraints and effects on people were considered at this stage.

Strategic environmental considerations

8.4 Holford Rule 1 is of relevance here, which recommends avoidance altogether, if possible, of the major areas of highest amenity value. This is interpreted as extensive areas that have been designated for their landscape, cultural, nature conservation or recreational value at the international or national level. Of these, the study area includes examples of the following:

- Special Area of Conservation (European designation)
- Sites of Special Scientific Interest (SSSI)(national designation)
- Scheduled Monuments (national designation)
- Listed Buildings
- Conservation Areas
- Historic Gardens and Designed Landscapes (national, non-statutory registers)
- National Trails (recreational routes)
- National Trust Estates open to the public
- Ancient Semi-Natural Woodland

8.5 There are none of the following potential strategic constraints within the study area:

- Ramsar sites (international designation)
- Special Protection Areas (European designation)
- National Parks (national designation)
- Areas of Outstanding Natural Beauty (national designation)
- National Nature Reserves (national designation)
- World Heritage Sites

8.6 The nomination of Pontcysyllte Aqueduct & Canal to become a World Heritage Site was officially approved in June 2007 and submitted to UNESCO by the UK in January 2008. The Site and its Buffer Zone were not initially considered in the routeing study (undertaken in 2006), but as this is considered to be a strategic constraint to routeing, the assessment has been revisited and updated accordingly.

8.7 There are no landscape designations of national importance or above within the area. The areas of highest amenity value in terms of landscape, in the context of this study, are those designated at local planning authority level. Such designation was not considered a strategic constraint to routeing but was given a high priority below the strategic constraints identified. Approximately one third of the study area has a local landscape designation.

8.8 In order to minimise the effects upon landscape character routeing through blocks of woodland should be avoided if at all possible. Thus woodlands were identified as a strategic constraint to routeing.

8.9 The following paragraphs summarise the main designation sites constraining strategic routeing.

Special Areas of Conservation

8.10 There are three SACs within the study area:

- River Dee and Bala Lake
- Johnstown Newt Sites
- Berwyn and South Clwyd Mountains.

8.11 The River Dee SAC applies to the watercourses only of the Dee and Ceiriog rivers. It is not possible to avoid crossing this SAC at least once in achieving a route between Legacy and Oswestry. Route options west of the confluence of the Dee and Ceiriog (east of Chirk) will cross both the Dee and Ceiriog.

8.12 Johnstown Newt Sites is a group of relatively small sites adjoining the eastern edge of the settlement of Rhosllanerchrugog and Johnstown. Although existing high voltage distribution lines cross the designated site, this SAC is likely to constrain route selection eastwards from Legacy

8.13 Berwyn and South Clwyd Mountains SAC covers an extensive area in the north west of the study area, approximately 2-3 km west of Legacy substation.

Sites of Special Scientific Interest

8.14 The study area contains eight SSSIs, only one of which, Ruabon & Llantysilio Mountain & Minera, is considered of sufficient extent to form a constraint to corridor routeing. This site is located within the Berwyn and South Clywd Mountains SAC, at the extreme northwest of the study area. The geographical location of all SSSIs was mapped in order to see if clusters or concentrations occurred which would form a constraint to routeing.

Ancient Semi-Natural Woodland

8.15 The extent of Ancient Semi-Natural Woodland within the study area is limited, and comprises several very small woodlands or parts of woodland. All woodland has been regarded as a strategic constraint to routeing, although it was recognised that some woodlands are likely to be affected due to their widespread occurrence throughout the study area. Areas of Semi-Natural Woodland were mapped as these would be avoided where possible if it was inevitable that woodlands would be affected by a route.

World Heritage Site nomination

8.16 The Pontcysyllte Aqueduct and Canal Site, together with its Buffer Zone, is located to the west of the study area. It extends from Horseshoe Falls on the River Dee, along the Llangollen Canal to the A483 road corridor in the vicinity of Chirk. Option 2, west of the A483/A5(T) corridor, would therefore require a crossing of the Nominated Site and its Buffer Zone.

Scheduled Monuments

8.17 The majority of Scheduled Monuments within the study area are of insufficient geographical extent to be considered at the strategic routeing stage. However Offa's Dyke, which runs broadly north south in the western part of the study area, is marked by a series of scheduled monument designations, as is Wat's Dyke, which follows a similar alignment east of Offa's Dyke. Frequent crossing or paralleling of these routes could have an impact upon their overall setting, and these were thus considered strategic constraints to routeing.

Listed buildings

8.18 Like most Scheduled Monuments, listed buildings can be worked around in finding the precise route, and are not addressed until the detailed routeing stage.

Historic gardens and designed landscapes

8.19 There are eleven Registered Historic Parks and Gardens within the study area, situated predominantly within a central band across the study area, in the vicinity of the Dee and Ceiriog valleys. Although some of the smaller estates could be avoided through route deviation, overall such a designation was considered a strategic constraint to routeing.

National Trust *e*states

8.20 Estates owned by the National Trust and open to the public, Erddig and Chirk Castle, were considered strategic constraints. Such estates are valued for both their cultural and recreational aspects, and are important tourist attractions.

Offa's Dyke Path National Trail

8.21 This national recreational route is located in the extreme west of the study area, only in part following the alignment of the ancient defensive earthwork.It was considered a strategic constraint to routeing.

Local landscape designations

8.22 The entire western part of the study area, from the edge of the main settlements westwards, is designated, either as an Area of Outstanding Beauty (Denbighshire CC), Area of Special Landscape Character (Oswestry BC) or Special Landscape Area (Wrexham CBC). This designation encompasses the area around Legacy substation.

8.23 The Dee and Ceiriog valleys, together with adjacent slopes, side valleys and historic parkland areas are largely protected by local landscape designations - Special Landscape Area (Wrexham CBC) and Area of Special Environmental Interest (North Shropshire BC). It is not possible to route between Legacy and Oswestry (within the study area) without crossing through this designation (or routeing through a main area of settlement), and so for this aspect, consideration was focussed upon minimising the distance through the designated area.

8.24 In the northern part of the study area further smaller Special Landscape Areas (Wrexham CBC) are found around Erddig and other parkland estates.

Effects on people

8.25 Supplementary Note A to the Holford rules states 'Avoid routeing close to residential areas as far as possible on grounds of general amenity'. This is applied at the strategic level as it influences broad-scale routeing decisions.

8.26 The study area is bounded by the large settlements of Wrexham and Oswestry to the north and south respectively. The primary constraint to routeing however is the almost continuous band of built development extending south from Wrexham to the Dee valley. This comprises the settlements of Rhostyllen, Rhosllanerchrugog, Johnstown, Ruabon and Cefn-Mawr. To the east of the study area there are few settlements larger than villages, with the exception of St Martin's.

Route comparisons – summary of broad route options

8.27 Detailed route comparisons for the four strategic options are included in Appendix 8A. A summary of the options considered is shown on Table 8.1. The key environmental issues relating to each option are identified. Each environmental factor is of varying weight and the determination of a preferred option is a judgement based on a combination of the factors and levels of constraint. However Table 8.1 provides a concise summary of the key issues which were considered.

8.28 In summary, Option 1 would utilize a gently rolling landscape with opportunities to use the numerous woodlands to integrate and assimilate the wood pole line. Additionally, few settlements are likely to be affected. Option 2 comprises a large proportion of dense urban development, which borders rising land with an open aspect, making any potential route likely to be visible to numerous receptors. A significant proportion of the more open, higher land is designated as a Special Landscape Area. Option 3, utilising the road corridor, has not proved technically possible in certain key locations. Option 4, installing an additional route parallel to existing high voltage overhead lines, is constrained by the cumulative visual effects of paralleling, together with proximity of existing lines to settlement and sites designated for their nature conservation value or historic landscape value.

Identification of preferred broad route option

8.29 The preliminary assessment of broad route options, as summarised in Table 8.1, indicated a strong preference for the identification of potential routes within Option 1 – East of the A483(T)/A5. This is followed in terms of preference by Option 4, which, although it contains a number of overhead lines already, similarly occupies a rolling landscape where there are plenty of wooded areas to screen the new line.

8.30 A more detailed route selection and evaluation process has been undertaken in the area to the east of the A483(T)/A5. This is described in the following chapter.

Table 8.1: Summary Table of Broad Route Options

KEY ISSUES → / ROUTE OPTIONS ↓	LANDSCAPE CHARACTER	LANDSCAPE DESIGNATIONS	PROXIMITY TO SETTLEMENTS/VISUAL IMPLICATIONS	ECOLOGY	TREES AND WOODLAND	ARCHAEOLOGY	LEISURE AND TOURISM	TECHNICAL
ROUTE 1 EAST OF A483(T)/A5	Gently undulating rural land in pastoral agricultural use supporting scattered farms and dwellings. Several large areas of parkland Woodland largely confined to Dee and Ceiriog Valleys although mature hedgerows and trees give landscape a more wooded appearance	Land around Dee Valley designated as a Special Landscape Area Erddig, Wynnstay, Pen y lan, Erbistock, Rosehill and Brynkinalt Registered Parks and Gardens & several unregistered parklands	Farms, isolated dwellings and small settlements scattered throughout area.	Dee and Ceiriog SAC Johnstown Newt Sites SAC situated between Legacy substation and A483(T)	Dense woodland along Dee and Ceiriog Valleys with occasional breaks in vegetation cover	Offa's Dyke (between Legacy substation and A483(T) Wat's Dyke Oswestry Hill Fort SM Rhyn Park SM	Erddig Park (National Trust) Shropshire Union Canal	Crossing existing 132kV and 400kV OHLs River Crossings
ROUTE 2 WEST OF A483(T)/A5	Topography rises to west beyond dense urban settlements along A483/A5 and becomes more rural. Dramatic steep wooded river valley landscapes of Dee and Ceiriog Rivers	All high ground designated as a Special Landscape Area Wynnstay, Brynkinalt, Brogyntyn and Chirk Castle Registered Parks and Gardens	Dense urban development of Rhosllanerchrugog, Pen y Cae, Ruabon, Acrefair, Cefn Mawr, Plas Madoc, Chirk Bank and Weston Rhyn. Few breaks in urban area - would require route to run through higher ground to west	Berwyn SAC Dee and Ceiriog SAC Johnstown Newt Sites SAC	Dense woodland along Dee and Ceiriog Valleys with very few breaks to utilise as crossing points	Offa's Dyke runs to the west of the A483(T) / A5 Oswestry Hill Fort SM Pontcysyllte aqueduct World Heritage Site Nomination	Chirk Castle (National Trust) Offa's Dyke National Trail Shropshire Union Canal	River Crossings
ROUTE 3 FOLLOWING MAIN NORTH SOUTH ROAD CORRIDOR	Busy transport corridor runs north south from Wrexham to Oswestry. Variable landscape character includes urban area, rural pastoral land, parkland and dramatic valleys	Passes through Wynnstay and Brynkinalt Registered Parks and Gardens Runs alongside Erddig Hall Parkland	Passes in close proximity to Ruabon and Gobowen. Views from road Land adjacent A5 allocated for housing at Rhoswiel and Gobowen	Dee and Ceiriog SAC	Dense woodland along Dee and Ceiriog Valleys. Blocks of woodland run up to A483(T)/A5 necessitating some tree removal	Offa's Dyke (between Legacy substation and A483(T)) Wat's Dyke Oswestry Hill Fort SM	Follows line of the main north south route through the Wales England borders Shropshire Union Canal	Utilising road bridges not technically feasible, requiring diversion from road corridor River Crossings
ROUTE 4 PARALLELING EXISTING 132kV LATTICE LINE	Gently undulating rural land in pastoral agricultural use supporting scattered farms and dwellings with several large areas of parkland. Woodland largely confined to Dee and Ceiriog Valleys although mature hedgerows and trees give a more wooded appearance	Land around Dee & Ceiriog valleys designated Special Landscape Area Passes through essential setting of Wynnstay Registered Park and Garden	Proximity to Rhosllanerchrugog and Johnstown (within urban fabric in places) Visual effect of proposed line considered greater if run in parallel to existing 132kV lattice tower line. Cumulative impact	Crosses Johnstown Newt Sites SAC Dee and Ceiriog SAC	Dense woodland along Dee and Ceiriog Valleys. Utilisation of existing OHL route will require tree removal in several places	Crosses Offa's Dyke (near Legacy substation) Oswestry Hill Fort SM Rhyn Park SM Crosses Wat's Dyke x3	Shropshire Union Canal and new marina development beneath existing 132kV OHL	Proximity of paralleling existing 132kV line River Crossings

High or major level constraint | Moderate level constraint | Absence or low or minor level constraint

9.0 DETAILED ROUTE OPTIONS

9.1 Following the selection of a broad route option, Option 1, in the previous chapter, this chapter outlines the development and evaluation of detailed route options to the east of the A483(T)/A5. Potential routes within this area were identified following the main principles of the Holford Rules and other published guidance and had regard to all the environmental baseline information gathered. As outlined in Chapter 5: Route Selection Process, routes were identified which avoided residential areas, including villages and other small settlements and occupied properties, areas of known nature conservation value, woodland, sites of heritage and amenity value. Routes were selected which maximised the potential for existing topography and vegetation to aid assimilation of the line into the landscape.

9.2 The potential routes identified within Option 1 are illustrated in Figure 9.1.

Zoning of the study area

9.3 The study area has been split into three geographical zones for the sole purpose of describing the route options. Each zone is described followed by a description of identified routes and reasons for their identification.

9.4 The zoning of the study area has been used as a tool to enable a variety of routes and combinations of part routes to be considered. The key areas in identifying routes were considered to be the substation entries and the river crossing points. The zoning has enabled different river crossing points to be considered with different substation entry options. The following zones have been identified:

- Zone A Legacy – this zone extends from the substation at Legacy to a point approximately 4km to the south in the vicinity of Moreton/Gyfelia.

- Zone B River Crossings – this zone extends from a point in the vicinity of Moreton/Gyfelia to the B5070/B5068 which runs in an east west direction from the A5 through St Martin's. This zone covers an area of approximately 8km which includes the Dee and Ceiriog River valleys.

- Zone C Oswestry – this zone extends from the B5070/B5068 to Oswestry substation located approximately 5.5km to the south.

9.5 The boundary between Zones A and B is not clearly apparent on the ground, however it is where the routes from A and B converge to a central point. The boundary between Zones B and C is clearly defined on the ground as the B5070/B5068. The route options to the north of this road are clearly focused on the river crossing points, whereas to the south the routes are focused on the entry into the substation at Oswestry making this an appropriate boundary for descriptive purposes.

Environmental and technical considerations

9.6 The guidance presented in the Holford Rules is considered in comparing route options. The analysis of the detailed route options is carried out at a smaller scale and finer grain than the analysis of the broad route options. In addition to the designations discussed under broad corridor routeing, all published local, regional and non-statutory designations are taken into account. In addition to effects upon main settlements, questions of visual amenity in terms of villages and other small

settlements, principal transport routes and tourist attractions that may be affected are all considered, as is the effect upon landscape character.

9.7 Appendix 9A identifies the environmental and technical constraints considered at the detailed stage.

9.8 Note is taken of the comparative length of the different route options at this stage because this is not only a technical and economic issue but also because the longer route that is built, the greater the length over which environmental disbenefits are caused.

Identification of the preferred route

9.9 It is not possible to identify the overall preferred route by selecting the preferred options on a zone-by-zone basis, as not all route options join at zone boundaries. The preferred option for one zone may not connect to the preferred route of an adjoining zone to form an overall coherent route. The route options illustrated in Figure 9.1 result in numerous possible overall routes from Legacy to Oswestry.

9.10 The method employed for reducing the number of route options to ultimately arrive at a preferred route was a process of direct comparison of sections of those routes which have common starting and end points. Through selecting the 'best' option for each section, the number of possible overall routes is reduced step-by-step, ultimately identifying the route which is, overall, likely to cause the least impact upon environment and people consistent with SP Manweb's statutory duties.

Route descriptions and comparison

9.11 Figure 9.2 shows the detailed route options and zone boundaries overlaid on the identified environmental and technical constraints. Figures 9.3, 9.4 and 9.5 show each zone in more detail. Appendix 9B comprises a description and evaluation of the potential routes identified within each zone. The resulting one or two 'best' routes within a zone are then combined to form overall coherent routes from Legacy to Oswestry, and these overall routes then evaluated/compared. A summary table of the alternative route options is presented within Appendix 9C.

The preferred route at consultation

9.12 The assessment of alternative options indicated a preference for a route comprising a combination of A1 with the western river crossing B1(C) – B5 - C1(A) . This combination is based on a balanced decision considering all environmental aspects required to create an entire connection from Legacy to Oswestry. It was considered that this combination offered the 'preferred route' to be taken forward within the consultation process.

9.13 Overall, the preferred route avoided settlements, areas of high amenity, cultural or nature conservation value, whilst maximising the potential of the existing landform and vegetation for screening purposes.

9.14 The line of the preferred route at public consultation, A1-B1(C)-B5-C1(A), is shown on Figure 9.6.

Future connections

9.15 The option using the western river crossing described above is considered the preferred alternative for reinforcement of the Legacy to Oswestry 132kV distribution network, regardless of whether there is a future requirement to provide a connection to Chirk from the proposed line. The case for proposing a western route is strengthened if a future connection to Chirk is required, as this is likely to involve a substantially shorter length of overhead line (and hence less environmental disbenefits) than a connection to a more easterly route.

10.0 CONSULTATIONS AND EVALUATION OF ALTERNATIVE ROUTE

Consultations

10.1 The preferred route option formed the basis for consultations with the public and statutory authorities through a Consultation Document (February 2007), public exhibitions and via the Company website. Meetings were also held with local authorities, nature conservation groups, cultural heritage bodies and parish councils.

10.2 SP Manweb reviewed the preferred route in light of comments received and, after considering environmental and technical issues, an alternative route was chosen for the southern section of the preferred route. A second round of consultations was undertaken on the Alternative Route and a second public exhibition held at St Martin's.

10.3 The following section provides a summary of the key issues that influenced the selection of the alternative route rather than the originally preferred route.

Reasons for development of an alternative route

10.4 The Preferred Route would cross Ifton Meadows Local Nature Reserve as an overhead line, closely following the alignment of an existing low voltage overhead line in this vicinity. Figure 10.1 shows the location of the Local Nature Reserve in relation to the Preferred Route and alternative route section.

10.5 Concerns regarding crossing this area were raised by Natural England, RSPB (Central England Regional Office), Oswestry Borough Council (Scrutiny Committee and Planning Department) and Shropshire Wildlife Trust. Main concerns were the potential effects upon ground nesting birds, such as skylark and meadow pipit, but also possible adverse effects upon recreational use of the site. The response to the public consultation demonstrated that Ifton Meadows is highly valued by the local community as a resource for informal recreation and enjoying wildlife. Approximately three quarters (43 of 57) of written responses received from members of the public objected to the line crossing Ifton Meadows.

10.6 The Electricity Safety, Quality and Continuity Regulations place a number of requirements on a Distribution Network Operator. Some of these are particularly relevant to overhead lines in the vicinity of recreational areas. Power Systems has recently adopted a policy (OHL-01-007) on overhead lines in the vicinity of such areas, which requires that new overhead lines at any voltage shall not be routed across recreational areas (Ifton Meadows LNR falls within this definition) unless appropriate risk mitigation measures are incorporated into the design. Risk mitigation measures range from provision of information to landowners, signage and guarding, to increasing ground clearances, deviating lines or undergrounding of lines.

10.7 The above two issues suggested it would be appropriate to reappraise how Local Nature Reserves are considered in the routeing process. In the initial assessment, they were considered as local designations for nature conservation, but not as local recreational resources. It has always been acknowledged that these sites had public access and could be used for recreation, but to avoid 'double-counting' they were considered only in terms of nature conservation. In the assessment which follows, the importance of Ifton Meadows as a recreation area, as well as a site of nature conservation interest, is taken into account.

Description of the alternative route

10.8 A link between the original Preferred Route at the Ceiriog valley, and eastern route options considered in the initial evaluation was considered to offer a diversion around both Ifton Meadows and the village of St Martin's. The link follows a northwest-southeast alignment to connect between the Ceiriog valley and Route C3 immediately east of St Martin's. In the initial evaluation of route options, Route C3 combined with C1(B) was assessed as being the best 'eastern' option between St Martin's and Oswestry sub-station, and was therefore used in this alternative. This route follows a generally north-south alignment, through sparsely settled areas near Wigginton, New Marton and Henlle, and joins with the Preferred Route south of Gobowen, near Great Fernhill. It crosses the Shropshire Union canal obliquely in the vicinity of New Marton Lock (see Figure 10.1).

Comparison between preferred route and alternative route

10.9 The method of evaluating route options followed the method for detailed route options comparison as outlined in Chapter 5: Route Selection Process, with the exception that the effects upon Local Nature Reserves were evaluated in terms of both nature conservation and recreation. (There are no other LNRs within the study area, and this re-evaluation has therefore not affected any other route comparisons.)

10.10 Note that, consistent with the original process of identification of routes, the presence of existing overhead lines of lower voltage is not considered in the routeing process, and the assessment effectively takes place as if lower voltage lines did not exist.

10.11 The comparison between these two routes is illustrated in summary form in Table 10.1. Note that only the sections which diverge (i.e. between the Ceiriog valley and Great Fernhill) are considered in the route comparison.

10.12 The assessment is finely balanced, with the original preferred route performing better in terms of visual amenity (from private property), and ease of assimilation within the landscape, and the alternative route having a lesser effect on several designations and trees/woodlands. In balancing these differing impacts, the avoidance of direct effects on Ifton Meadows LNR and upon trees and woodlands, is considered sufficient to outweigh the effects upon landscape character and upon individual visual amenity likely to arise if the alternative route is selected.

Table 10.1: Comparison of Original Preferred Route and Alternative Route

Aspect	Original Preferred Route	Alternative Route	Preferred
Distance from St Martin's	Routed away from main settlement	Proximity to northeastern fringe of village (Mount Bradford Lane, c. 15 properties @ 250-300m from centre line)	Original
Scattered dwellings	Maintains distance from properties north of Ifton Meadows. Proximity (within 200m of centre line) to 16 properties.	Proximity (within 200m of centre line) to 28 properties.	Original
Landscape character/ landform	Route follows generally elevated/exposed position along ridgeline north of Ifton Meadows. Generally routed through undulating terrain with plentiful mature tree cover.	Route crosses relatively flat land north of St Martin's, with large fields bounded by trimmed hedges and occasional hedgerow trees. Relatively open, low-lying landscape west of New Marton – route less easily assimilated.	Original

Landscape designations	2.2km within ASLC (between Bramble Wood and B5070)	0.6km within Area of Special Landscape Character	Alternative
Nature conservation designations	0.3km across Ifton Meadows LNR Proximity to Ebnal Pool (local wildlife site).	Immediately adjacent Fernhill Pastures SSSI for c. 0.1km.	Alternative
Trees and woodlands	0.4km adjacent disused rail line – some tree removal likely to be required. Crosses eastern extension of Bramble Wood (50m). 0.4km adjacent Hillyards Plantation.	Adjacent Butt's Wood (Great Fernhill) for c. 0.2km.	Alternative
Cultural heritage	Parallels Wat's Dyke SM area for 0.5km (60m distant from centre line of route corridor) Proximity to 4 listed buildings: Great Fernhill Ebnal Lodge 2 buildings within Henlle Park	Proximity to 4 listed buildings: Great Fernhill New Marton Lock Keepers Cottage Pen y Bryn Kennels (Ifton)	Alternative
Recreation/ tourism	Crosses Ifton Meadows LNR. Crosses Shropshire Union canal (directly).	Crosses Shropshire Union canal (obliquely)	Alternative
Development allocations	Adjacent industrial land allocation at Bank Top	None identified	Alternative
Route length	6.3km	7.3km	Original

Further issues raised in consultation

Strategic Option 3: Following the A483(T)/A5 road corridor

10.13 During the consultation process, a number of respondents queried the reasons for not choosing the strategic option of following the A483(T)/A5 road corridor for the Legacy to Oswestry route.

10.14 This option was subsequently revisited but following further review and discussion with North Wales Trunk Road Agency the original decision to discount the option was reconfirmed. Reasons for discounting this option are outlined below.

10.15 The key issues affecting the routeing of an overhead line along the existing road in the northern half of the study area are the substantial areas of land supporting existing built development. The town of Ruabon and the Johnstown Newt Sites SAC restrict options for routes next to the road through this area. Developed areas immediately abut the road in places, and in the case of Ruabon development it abuts the road corridor on both sides.

10.16 In the central part of the study area the key constraints are the areas of historic parkland associated with the Wynnstay and Brynkinalt Estates. The A483(T)A5 runs through the Wynnstay estate for over 2km and the Brynkinalt Estate for approximately 1.5km. Historic parklands have been identified as a key strategic constraint to routeing, to be avoided where possible. Within the parklands, areas of woodland abut the road corridor in places.

10.17 The A483(T)A5 crosses the River Dee through the Nant-y-Belan and Prynela Woods SSSI. An overhead line next to the road at this point would be required to pass

through the two areas of ancient woodland, identified as key constraints to routeing. A large number of trees would have to be removed.

10.18 The steep river valleys of the Dee and Ceiriog, in the vicinity of the two bridges, would make construction of an overhead line very difficult. A wood pole line would need to be routed down to the valley floor through these densely wooded areas resulting in significant clearance of ancient woodland and the crossing of the SSSI for the River Dee crossing as stated above. The Ceiriog Valley crossing would also require a large amount of woodland clearance, some of which is ancient woodland. The alternative would be the construction of large steel structures on either side of the valleys to support a long span of overhead line. These resulting structures would also require significant tree clearance and be visually obtrusive.

10.19 It is not possible to erect wood poles along the viaducts.

10.20 Original consultation with the local authority previously responsible for the viaducts (Conwy County Borough Council) confirmed that there was no provision for utility services in the construction of the viaducts. Subsequent discussions have been held with North Wales Trunk Road Agency, the now responsible party for the viaducts, who have reconfirmed the previously stated position. This view is supported by the Welsh Assembly Government, which has also advised that the A483 in Wrexham is a Protected Street under the New Roads and Street Works Act, thus utilities cannot be placed on it (correspondence 22.02.08 to SP Manweb).

10.21 There are six road junctions with the A483(T)/A5 between Wrexham and Oswestry, and numerous bridges over the main road. Should an overhead line be situated adjacent to the road corridor, it is likely that it would have to be routed around these structures and junctions (termed a local deviation), rather than crossing over them.

10.22 Built development either side of the roundabouts at Halton (including Chirk Airfield) and Gledrid form restrictions on routeing in these areas. There are no viable options for routeing an overhead line past these areas without considerable deviations from the road corridor.

10.23 There are fewer constraints to the south adjacent the A5, however the settlements of Gobowen and Rhoswiel lie alongside the road severely restricting opportunities for routeing an overhead line in this area.

Undergrounding

10.24 The A483(T)/A5 road route was also suggested during the consultation as a suitable route for an underground cable. The reasons for not undergrounding generally are covered in Chapter 3: Alternatives. In the case of an underground cable route following the A483(T)/A5 road corridor, it would not be technically feasible to lay cables across the road bridges over the Dee and Ceiriog, and thus diversions, either by overhead line or underground cable, would be required. The environmental effects of such diversions are outlined in 10.18 above, and, notwithstanding any technical difficulties in construction, are considered sufficient to discount this option from further consideration.

11.0 THE PROPOSED ROUTE

Adoption of proposed route

11.1 Following the consultation process and a technical review of the preferred (alternative) route, in which a minor modification was made to the alignment crossing the River Dee, this alternative route was confirmed as the proposed route. The line of the proposed route is described below, illustrated in Figure 1.1 and is overlain on environmental constraints in Figure 11.1.

11.2 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. The proposed route avoids settlements, areas of high amenity, cultural or nature conservation value, whilst maximising the potential of the existing landform and vegetation for screening purposes. The route is described from north (Legacy) to south (Oswestry).

Route from Legacy to Dee valley area

11.3 The proposed 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. Due to numerous technical constraints between Hafod Community Park and the A483(T) road corridor, one support pole would be sited within the boundary of Johnstown Newt Sites SAC, (at a position agreed with CCW).

11.4 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.

Crossing River Dee and River Ceiriog

11.5 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.

11.6 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.

11.7 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.

Approach to Oswestry Substation

11.8 The route crosses the B5068 (Ellesmere Road) immediately east of St Martin's,and turns to follow a south-westerly alignment through the Upper Wigginton 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. The route is 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.

11.9 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).

Refinement of proposed route

11.10 Following adoption of a proposed route, further detailed route planning was undertaken in order produce a detailed development footprint upon which the environmental impact assessment is based.

11.11 Detailed ecological, arboricultural and archaeological surveys were undertaken based upon an 80m wide corridor within which support poles would be sited, and informed the technical line survey and design. **The resulting 'optimised proposed route', including pole positions, was used for the purposes of assessing environmental effects.**

Tolerance

11.12 It is standard practice in making an application for consent to install a new overhead line to include a request for 'tolerance'. This is generally a corridor of specified width, within which the supports may be installed. It is anticipated that this will also form a condition accompanying the S37 consent. The reason for including this tolerance is that it is impractical to liaise in detail with each landowner regarding the preferred position of each support in advance of the application being made, although preliminary negotiations will have been undertaken. Additionally, minor pole location alterations may be required to accommodate changes in environmental constraints or result from updated construction/technical survey information.

11.13 It is SP Manweb's intention to build the line along the route shown in the drawings as the centreline. Final discussions with landowners with regard to precise positioning; discovery of very local variations in soil conditions, or the presence of an otherwise

unforeseen constraint could mean that the positions change slightly within the tolerance identified.

11.14 The tolerance sought for this overhead line is the 80m wide corridor which has been subject to detailed environmental surveys.

Locations where tolerance has been reduced

11.15 There are a number of situations where a reduced tolerance is sought, primarily to avoid environmentally sensitive locations within the corridor. This is to ensure that changes to the position of the line and associated works do not cause an unacceptable change in the extent or significance of any environmental effects, compared with those identified in the ES. The general location of these areas is shown on Figure 11.2.

11.16 A reduced tolerance for siting of poles will be sought within Johnstown Newts Sites SAC. One single pole will be sited at the position shown on Figure 11.3. In this location, it has not proved technically feasible to avoid siting within the SAC. The position of this pole and method of installation have been agreed with CCW and Wrexham CBC Ecologist. The tolerance sought for the single pole sited within the SAC is 5 metres in any direction.

11.17 A reduced tolerance will also be sought in the vicinity of the River Dee and Bala Lake SAC, which is crossed in two places by the proposed route, and applies to the watercourse to the top of the river banks only. No poles will be sited within this SAC. The tolerance corridor for siting supports will be reduced to exclude the SAC site, although of necessity the conductors will cross the rivers.

11.18 In addition to the above three locations, the areas which are considered sufficiently sensitive to require reductions in tolerance corridor width are (from north to south):

- Wat's Dyke Scheduled Monument (south of Black Brook Bridge)
- Moor Wood County Wildlife Site and mature woodland
- Mature woodland north of Coedleoedd
- Nant y Belan & Prynela Woods SSSI, Wrexham
- Mature Ancient Semi-Natural Woodland south of Coedleoedd
- Wat's Dyke/Bramble Wood (nationally important but unscheduled archaeological site and mature ASNW)

11.19 In developing the optimised proposed route, supports have not been sited within the sensitive areas indicated on Figure 11.2 (and further defined on detailed plans relating to Chapters 15, 16 and 18) where this is possible. Where it has not proved possible, the position of the optimised proposed route will be fixed as shown, with a tolerance of 5m either side. This applies in two locations, where the proposed overhead line crosses Moor Wood County Wildlife Site (Figure 15.7) and where it crosses the unscheduled section of Wat's Dyke at Bramble Wood (Figure 15.10).

11.20 Around mature woodlands, the reduced tolerance corridor incorporates an allowance for safety clearances, related to potential tree falling distances.

Mitigation

11.21 The aim of design and evaluation is to minimise environmental effects as far as possible within the technical constraints of a project of this nature. Mitigation has been undertaken at three levels:

- Avoidance of potential effects;

- Reduction of potential effects; and
- Offsetting.

11.22 The key elements of the mitigation for this route applied at each level are set out below. Full details of the mitigation for each discipline are set out within the individual assessments and the overall package of mitigation measures is set out in Chapter 25: Mitigation Schedule.

Avoidance

11.23 The process of selection of the route is the most important and effective source of mitigation for the overhead line.

11.24 Programming of construction operations will be employed in order to avoid potential effects where seasonal constraints dictate (for example, scrub clearance will be programmed outside the bird breeding season).

11.25 Demarcation of working/exclusion areas and adoption of appropriate working practices will be developed and employed to avoid specific effects.

Reduction

11.26 The likely effects of the proposed overhead line have been reduced through the technical design of the line itself. Development of the 132kV wood pole line has allowed the overhead line to be carried on this structure (maximum 16m tall) rather than the more typical steel lattice towers (26m tall).

11.27 Routeing, programming and demarcation of working areas can all serve to reduce environmental effects, where it is not possible to avoid entirely.

Offset

11.28 Where any unexpected discoveries are made suitable assessment and recording will be undertaken, particularly in the case of any previously unrecorded archaeological finds.

11.29 Replacement planting of trees will be undertaken at a ratio of 2:1. The planting will be in locations that are appropriate to replace the losses, subject to landowner agreement. Where landowners would prefer not to accept tree planting, SP Manweb would make a contribution to an appropriate local wildlife trust, for the purpose of offsetting tree losses with biodiversity benefits to the locality.

12.0 IDENTIFICATION OF EFFECTS

12.1 This part of the Environmental Statement presents an assessment of any likely significant environmental effects of the proposed overhead distribution line. As stated previously, the route selection process is the primary measure used to prevent, reduce or offset significant adverse effects. The following chapters identify and assess any remaining likely significant environmental effects of the proposal, and identify measures which would be taken to mitigate those effects.

12.2 Topics in the Environmental Assessment are addressed as follows:

Chapter 13	Visual effects
Chapter 14	Effect on the landscape
Chapter 15	Effects on ecology and nature conservation
Chapter 16	Effects on archaeology and cultural heritage
Chapter 17	Effects on land management
Chapter 18	Effects on trees and woodlands
Chapter 19	Effects on tourism and recreation
Chapter 20	Effects on mineral resources and landfill sites
Chapter 21	Effects on infrastructure
Chapter 22	Physical effects arising from the use of high voltage overhead transmission lines and equipment
Chapter 23	Effects on planning and development proposals
Chapter 24	EIA follow-up and Environmental Management Plan
Chapter 25	Mitigation schedule
Chapter 26	Summary of effects and conclusions

12.3 The proposed route upon which impact assessment was undertaken is the **optimised proposed route**, described in Chapter 11: The Proposed Route.

Assumptions

12.4 Existing low voltage lines which cross the proposed high voltage line **have been assumed to remain in position for the purposes of impact assessment**. At a more detailed design stage, consideration is given to localised diversion and/or undergrounding of existing low voltage lines where they directly interfere or result in significant adverse cumulative effect.

12.5 Existing low voltage lines which occupy a route which could be utilised by the proposed line **have been assumed to be locally diverted or undergrounded**.

12.6 The locations of construction access routes, temporary storage areas for dispersal of plant and equipment and additional working areas required for stringing operations are not yet known. The effects of these have not been assessed, although the selection of locations would comply with the requirements of the Environmental Management Plan (EMP).

13.0 VISUAL EFFECTS

Introduction

13.1 This chapter considers the likely significant visual effects of the proposal from specific viewpoints. The identification of potential visual effects allows the consideration of route alternatives at a strategic level and, at a more detailed level, micro-routeing to ensure that the overhead line is positioned in a manner that minimises visual intrusion.

13.2 Effects on the landscape resource and landscape character are considered in the subsequent Chapter 14: Effect on the Landscape.

Visual impact assessment method

13.3 Reasoned professional judgement is used to assess the overall effect of the development proposal on visual amenity (views). The principal technique for the assessment of these effects is from detailed viewpoint analysis.

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

Baseline information

13.5 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, to identify features which might screen views, and to identify potential visual receptors.

13.6 In assessments of this nature, a computer generated 'Zone of Theoretical Visibility' may be produced, based on topographic information, to identify areas from where the proposed development would be visible (known as 'bare ground visibility'). This has not been undertaken as the general pattern of visibility within the study area is such that this tool would not provide meaningful results. As explained in Chapter 5: Route Selection Process, this is due to the nature of the landscape and the size and scale of the proposed development. The locally undulating nature of the terrain and the amount of scattered mature tree cover would combine to screen many views of the proposed line. The proposed wood pole supports are of similar height to the mature trees, and so carry the conductors at a level/elevation which is generally below the horizon formed by trees. Therefore any analysis of visibility which does not take account of tree cover would produce a much larger zone of visibility than is likely to result in reality.

13.7 Extensive field survey was used to gain an understanding of potential extents of visibility. Field survey work for the visual assessment was carried out at the same time as the landscape assessment. No access to properties was sought and the assessment is therefore based on a best assumption from publicly accessible locations outside or close to properties.

Visual receptors

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

13.9 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).

13.10 Views of and from within valued landscapes are also considered to be visual receptors (LI/IEMA, 2002). Valued landscapes considered within this assessment are described below.

Valued landscapes as visual receptors

13.11 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).

13.12 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 proposed route corridor is within the vicinity of four Registered Historic Parks and Gardens: Erddig; Wynnstay; Brynkinalt; and Pen-y-lan. Similarly, the effect on a listed building, conservation area or scheduled monument or their settings needs to be considered.

Sensitivity

13.13 Sensitivity of visual receptors depends upon location of viewpoint, expectations and activity of the receptor and the importance of the view.

13.14 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.

13.15 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.)

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

13.17 In this assessment, sensitivity was assigned to receptors as shown below.

Table 13.1: Sensitivity of receptors

Receptors	Relative Sensitivity
Residential properties (Lower Storeys)	High
Residential properties (Upper Storeys)	Moderate
Users of recreational paths/ canal users	High
Users of other public rights of way	Moderate
Workers	Low
Motorists/rail users	Low

13.18 Importance of views is generally considered in the context of values placed on scenes, alternatives available and the relative scenic quality (for example, its appearance in guidebooks, on tourist maps and by facilities such as viewpoints provided for its enjoyment). Importance of the view has been assigned according to the following scale:

- Local
- District
- Regional
- National.

13.19 An example of a nationally important view might be a view to or from a nationally recognised heritage site, such as Stonehenge. A regionally important view might be one to or from a tourist attraction considered a key feature of the region, such as the Llangollen canal, or key views to and from a Registered Historic Parkland of Grade I quality (such as Wynnstay). A view of district importance might be one from an area of locally designated landscape, which is valued in published documents at a borough/district scale. Views which are not to or from any recognised designation, nor representing views of many (such as the views from the edges of settlements), might be considered important at a local scale.

Selection of viewpoints

13.20 Viewpoints for detailed visual assessment have been 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
- views from identified recreational resources within the zone of visual influence
- important historical or cultural sites and the effects on their settings.

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

13.22 **The selection of viewpoints is therefore not a representative sample of <u>all</u> the visual receptors, but is deliberately biased to be representative of the most sensitive visual receptor types/groups – namely residential areas and valued landscapes/sites.**

13.23 Viewpoint locations were identified initially through a preliminary study of likely visibility of the proposed overhead line. These locations have been discussed and confirmed with the relevant authorities (local planning authorities, Natural England and CCW) prior to assessment. The EIA Scoping Opinion request (Appendix 1C) which was circulated to a wide range of stakeholders also included the proposed assessment method and list of viewpoints for consideration.

13.24 Each viewpoint was visited and a photographic record taken using a focal length of 35mm, which is the default setting for the digital camera used. Although viewpoint photographs have been taken in the spring and summer period, allowance has been made within the impact assessment for views being more extensive in winter.

Photomontage illustrations

13.25 For a selection of the viewpoints, photomontages have been created to illustrate the proposals, and to aid understanding of anticipated visibility effects.

13.26 Photomontages provide a digitised visualisation of the proposed overhead line. Using computer modelling of the proposed overhead line, an image of the line is superimposed on a viewpoint photograph to create a representation of the proposed line from the viewpoint. The viewpoint photographs for the photomontages are taken with the camera focal length set at 50mm, which gives a slightly wider angle view compared to normal human vision, but allows the viewer of the photograph to gain a clearer impression of the extent of the proposed linear development in the landscape.

Viewpoint and photomontage locations

13.27 Table 13.2 indicates the 36 viewpoint locations which have been considered in the assessment. Generally, the viewpoints are numbered from north to south, but four viewpoints (33-36), added during discussions with local planning authorities, are out of sequence.

13.28 Viewpoint locations are illustrated on Figure 13.1.

Table 13.2 Schedule of viewpoint and photomontage locations

Ref.	Description/location	Reason for selection	Distance from centre of tolerance corridor	Is Viewpoint West or East of line?	Photo-montage?
1	View from Wrexham Road (B5605), Pentre Bychan, looking east towards Hafod community woodland	Start of OHL	On	Online	No
2	Hafod-y-bwch, Corkscrew Lane, looking N (towards Bersham tip)	Adjacent Hafod community woodland, publicly accessible SAC site	100m	West	No
3	Road bridge over A483(T) near Ty Coch Farm, looking S	Elevated viewpoint	100m	East	No
4	View from Open Farm, Hafod-y-bwch (near Middle Sontley) looking W	Visitor facility/recreational resource	400m	East	No
5	View from B5426 near Eddisbury Grange, looking E		200m	West	No
6	View from adjacent The Crimbles, between Crabtree Green and Park Eyton, looking SW	Property close to route	100m	East	No
7	A539, near Park Eyton Lodge, looking E	Listed building, edge of Wynnstay Park registered parkland	400m	West	Yes
8	View from edge of Pen-y-lan hamlet, looking NW towards Crab Mill	Edge of settlement	600m	East	No
9	Crab Row Cottages, Pen-y-lan, looking NW towards Dininlle Cottages	Properties	200m	East	No
10	Park Farm entrance, Pentre (N of River Dee) looking SE	View incorporates 2 other power lines	475m	West	No
11	Forge Farm, Pont-y-Blew, looking E over River Ceiriog valley	Locally designated landscape	400m	West	Yes
12	Pont Llygoden (road bridge) over River Ceiriog, looking N	Locally designated landscape	100m	East	No

Ref.	Description/location	Reason for selection	Distance from centre of tolerance corridor	Is Viewpoint West or East of line?	Photo-montage?
13	View from Tenement hamlet, Ceiriog valley, looking NE	Properties and Locally designated landscape	100m	West	Yes
14	View from Maelor Way, E of Bramble Wood, looking E	Recreational route	300m	West	No
15	Pen-y-bryn (near Kennels) looking W	Listed building	325m	East	No
16	Footpath adjacent The Malt House, looking SE	Property close to route	70m	East	Yes
17	Ifton Heath to Street Dinas road, adjacent to Gilrhos, looking N	Property close to route	70m	West	No
18	Footpath N of Mount Bradford Lane, St Martin's, looking NE	Edge of St Martin's settlement	200m	West	No
19	Ellesmere Road fishing pond, near Oakfield Farm, looking NE	Edge of St Martin's settlement	150m	West	Yes
20	Pentre Morgan, looking W along Ellesmere Road	Listed building	450m	East	No
21	Footpath/lane intersection, E of Wigginton Farm, looking W	Public rights of way	120m	East	No
22	Shropshire Union Canal towpath S of Pen-y-bryn, looking E	Recreational route	260m	West	No
23	New Marton Bridge/Lock, Shropshire Union Canal, looking NW	Recreational route; listed building (lock)	180m	East	Yes
24	Intersection of footpaths south of Top House Farm, Rhosygadfa, looking SE	Public rights of way	130m	West	No
25	View from road bridge over River Perry, near Fernhill Pastures SSSI, looking SW	Signed cycle route	200m	West	No
26	PROW adjacent Henlle, looking NW	Elevated right of way	500m	East	No
27	View from lane north of Fernhill Pastures SSSI, looking S	Designated nature conservation site, adjacent route	On	On line	No

Ref.	Description/location	Reason for selection	Distance from centre of tolerance corridor	Is Viewpoint West or East of line?	Photo-montage?
28	From Whittington Road (B5009), Gobowen, near Oak Mill, looking NE	Signed cycle route; elevated viewpoint	400m	West	No
29	On B5009 at entrance drive to Great Fernhill, looking SE	Listed building	100m	West	Yes
30	Footpath from North Drive, Park Hall, looking SW	Public footpath	40m	West	No
31	View from B5069 south of Five Crosses roundabout (with A5), looking SE	Transfer point of OHL to cable	250m	West	No
32	View from Old Oswestry Fort, looking NE	Scheduled Monument; elevated viewpoint	800m	West	No
33	View from Hafod Community Park looking NE	Recreational site, elevated viewpoint	110m	West	Yes
34	View from top of Picnic Mountain, Hafod Community Park, looking SE	Recreational site, elevated viewpoint	200m	West	No
35	View SW along Wat's Dyke (public footpath), south of Black Brook Bridge on the B5426	Linear Scheduled Monument, Public footpath, crossed by proposed route	100m	East	Yes
36	View NE along Wat's Dyke (public footpath), near Outfalls Cottage	Linear Scheduled Monument, Public footpath, crossed by proposed route	150m	West	No

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Assessment of impact

13.29 The importance of the proposed development in the views and the sensitivity of the receptor are considered in determining the magnitude of effect (the scale of change) and in making assessment of the significance of effect. The magnitude of effect takes into account the nature, scale and duration of the development, i.e. how noticeable it will be.

13.30 Assessment of magnitude 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.

13.31 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.

13.32 Magnitude of effect has been evaluated using the criteria for assessment presented in Table 13.3.

Table13.3: 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)

13.33 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.

13.34 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

13.35 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.

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

- An impact of major 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 minor 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.

13.37 As outlined in Chapter 6: Assessment of Effects, any significance of effect assessed as “high” or “moderate” (in terms of the criteria identified above) would be considered “significant” in terms of the EIA regulations. Any effect assessed as “minor” would be considered as “non-significant” and therefore “non-material” in terms of the EIA regulations.

13.38 In addition to their significance, effects are described according to their nature, which can be beneficial, neutral or adverse. The timescale of each effect is also assessed as being short-term, medium-term or long-term, and permanent or reversible. In the case of this overhead line development the effects will in general be considered permanent but reversible.

Baseline studies

General visual context

13.39 The majority of the study area is gently undulating farmland with a generous amount of tree cover. It is a rural landscape with few settlements, but a scattering of farmsteads and hamlets, connected by a network of narrow, often single track, winding lanes. The majority of these are bounded by tall (over 2m high) hedgerows, a critical factor affecting views and visibility from the road network, as often it is only possible to appreciate the wider view through field gates. Elsewhere, and beyond and above the confines of hedges, visual containment is provided primarily through tree cover, particularly the 'layering effect' of numerous field boundary trees.

13.40 There are, however, additional features of the landscape which affect visibility and opportunities for views.

13.41 Land rises to the west of the study area, to the foothills of the Clwydian Range. Whilst these are too distant to have views of the overhead line, they form a noticeable feature and elevated horizon or backdrop in many views westwards.

13.42 The key topographic feature within the study area, the steeply incised valley of the River Dee and its tributaries, also influences visibility. Views within the valleys are largely enclosed, whilst the valleys themselves may not be apparent (hidden from view) from the wider surroundings, except where they are crossed.

13.43 In the north of the study area, the artificially elevated landforms of former colliery spoil heaps at Bersham and Hafod both form features within many views, and vantage points from which panoramic views can be obtained. Public access is encouraged at Hafod, where a seating area has been created at the top of 'Picnic Mountain'. To the south, the embanked ramparts of Old Oswestry hill fort offer a similar, publicly accessible viewpoint.

13.44 Other noticeable features in views are the chimney and associated smoke plume of the Kronospan factory at Chirk and, to a lesser extent, the main communications corridor through the area, the A483/A5 trunk road. Infrastructure associated with the road (lighting columns at roundabouts), movement of vehicles and the linearity of roadside woodland strips are the noticeable/perceptible elements in views, rather than the road itself.

13.45 The A483/A5(T) will also be the location from which most people (visual receptors) obtain views of the proposed overhead line, and as such the nature and extent of such views merits consideration.

13.46 The Shropshire Union Canal forms a linear feature in views from the surrounding higher ground.

13.47 In addition to the network of narrow winding lanes, the landscape is crossed by a comprehensive network of footpaths. Whilst the numbers of visual receptors using the lane and footpath network may be relatively few, their attention is likely to be focussed on appreciation of the landscape and views.

Project description and mitigation

Key features of project

13.48 The project characteristics are described in detail in Chapter 4. The key features relating to visual assessment are:

- Form of supporting structures
- Height and spacing of structures
- Materials and colours used

13.49 As with any material subjected to the elements on a consistent basis, wood pole structures suffer weathering and subsequent colour variations over time. The colour of the poles at the time of construction is a dark brown colour, which fades to an appreciably lighter silver-grey colour over time. The rate of change of colour will depend on the prevailing weather conditions and to some degree on the type of timber and timber treatment that is used. Steelwork parts of the supports will weather from a 'shiny' galvanised finish to a flatter grey colour. These changes are likely to reduce the visibility/perceptibility of elements above the skyline over time, but may increase the visibility of supports which are viewed against a dark backcloth (for example, coniferous woodland).

Mitigation

13.50 The process of selection of the proposed route has been the most important and effective source of mitigation for the overhead line. By employing appropriate routeing strategies, it has been possible to prevent a number of potential effects from occurring. This has been achieved through arriving at a proposed route which responds to the specific landscape and visual characteristics of the site, and which seeks to avoid specific locations that are deemed particularly sensitive to development of this type.

13.51 The use of wood pole supports to support 132kV conductors represents a change from the traditional use of steel lattice tower supports for lines bearing the electrical capacity required for the Legacy – Oswestry reinforcement. The reduced height of the structures is considered to result in a corresponding reduction in visual impact. A trial section using the proposed supports was constructed to confirm both the technical requirements and to gain an appreciation of its appearance within the landscape. Images of this, and a recently constructed overhead line using this method of support, are included at Figure 4.3.

13.52 Where possible, supports will be located close to field boundaries where the existing hedgerows, often with associated trees, help to provide screening and/or a backcloth for the overhead line.

13.53 The route has been designed to follow the edge of woodlands, in order to maximise backgrounding opportunities. In more open parts of the landscape, the proposed route will follow as straight a line as possible, in order to minimise angle poles/stays.

13.54 During routeing, consideration was also given to the presence of existing high voltage power lines, and how best to avoid cumulative visual effects (generally by crossing at right angles, and not running parallel for any length).

13.55 In selected locations the management of existing vegetation or the planting of new trees, shrubs and hedgerows may be proposed further to mitigate adverse visual

effects. This would be subject to agreement with the landowner, and so is not considered within the impact assessment.

Assumptions

13.56 Existing low voltage lines which cross the proposed high voltage line have been assumed to remain in position for the purposes of visual impact assessment. At a more detailed design stage, consideration is given to localised diversion and/or undergrounding of existing low voltage lines where they directly interfere or result in significant adverse cumulative effect.

13.57 Where an existing low voltage line occupies a route which would be utilised by the proposed line, the low voltage line is assumed, for the purposes of assessment, to have been diverted or undergrounded.

13.58 In assessing operational phase effects, the assessment is made on the basis that the line construction has recently completed, i.e. supports are dark brown in colour, metalwork has not dulled from its original shiny galvanised finish. This is likely to represent the most visible phase of development.

13.59 Construction phase effects are likely to include all the effects associated with the operational phase (supports and conductors), although in reality this will be a gradual increment over time, rather than the full scheme from the start of construction, plus additional effects relating to plant, materials and work personnel. Construction phase effects are short term and likely to last only a few weeks in a particular locality.

Results/assessment of effects

(Extent of) Visibility of the proposed overhead line

13.60 Visibility of the proposed overhead line is described from north to south, using identifiable elements, such as roads and settlements, but subdivided into the various landscape character types within which the overhead line would be situated (see Chapters 7: Study Area Inventory, Figure 7.6 and 14: Effect on the Landscape). The nature and extent of views within and from a landscape form a component of its character, and so the two aspects are inter-related. Reference is made to Figures 13.2 to 13.19 inclusive, which illustrate viewpoint photographs.

7C Rhosllanerchrugog, Rhostyllen, Ruabon, Pen y Cae

13.61 The reinforcement will be by underground cables from Legacy substation to a point east of the B5605, Wrexham Road, Pentre Bychan. The terminal support structure, together with several more easterly supports, is likely to be visible from rising land to the west up to Pentre-bychan Road. Views from further west are likely to be limited by the presence of woodland in the vicinity of the crematorium. Views of the overhead line will be possible from properties lining the B5605 in Pentre Bychan. These properties are in an elevated position above the road, and have downhill views eastwards. The section of overhead line between Corkscrew Lane and the A483(T) would be visible from Hafod community park. This park offers elevated viewpoints, though much of the land is wooded. Views of this section would also be possible from the upper, west facing slopes of Bersham colliery tip, which has no woodland cover.

13.62 The proposed overhead line would cross the A483(T) immediately east of Haford community park. This elevated landform would limit visibility from the west. Views of

the line are likely to be limited to two to three fields distance in all other directions due to the presence of tree cover and by the gently rolling topography.

13.63 This character area is illustrated in viewpoint photographs 1, 2, 33 and 34 (Figures 13.1 and 13.18).

13A Welsh Maelor

13.64 Between the A483(T) crossing and the Gyfelia/Moreton area, visibility is similarly likely to be confined to two to three fields distant. This is a rolling, well treed landscape. The area between the B5426 and Park Eyton supports a dense network of public footpaths (including one along Wat's Dyke), but few roads.

13.65 In the vicinity of Park Eyton and the A539 crossing the landscape is less intricate, with larger fields and less hedgerow tree cover, although the proportion of large woodland blocks is increased. In this area, it will be generally possible to see a greater extent of the line, compared to visibility within the landscape further north. Visibility of the line is likely ultimately to be restricted by the edges of these woodland blocks (The Drive Wood, part of the Wynnstay Park registered parkland, to the west, Caldecott's Wood to the north, Long Wood to the east and Nanterral Woods to the south), although intervening smaller tree groups will limit extent of line visible in some places.

13.66 The overhead line between Park Eyton and Rhosymadoc is likely to be visible from the fringe of the small village of Pen-y-lan to the south. Some channelled views may be possible from the lane alongside the eastern edge of Wynnstay Park registered parkland, particularly where the line crosses a low ridge, south of The Drive Wood, between two valleys containing tributaries to the River Dee. A substantial stone wall bounds the parkland along this lane, curtailing views.

13.67 Between Rhosymadoc and the River Dee crossing, the proposed overhead line would be situated on the western flank of Moor Wood, which occupies a steeply sloping valley leading to the River Dee. The woodland will effectively prevent any views from further east. The land continues to rise westwards from the woodland edge, towards a low ridge. Visibility from the west is likely to be limited by a combination of this local ridgeline and hedgerow vegetation, which comprises a generous amount of mature trees in this vicinity.

13.68 The above character area is illustrated in viewpoint photographs 3 to 10 inclusive, 35 and 36 (Figures 13.3,13.4, 13.5, 13.6 and 13.19).

12A Dee/Ceiriog Valley & Riverside Meadows and Wooded River Gorge (formerly SP/72 Castle Mill)

13.69 Visibility of the overhead line in the vicinity of the River Dee crossing is likely to be very restricted, limited by both topography of the deeply incised river valley and woodland cover.

13.70 Between the River Dee crossing and the River Ceiriog crossing, the line would be visually contained within the Ceiriog valley, by rising land to the west and by both rising land and woodland to the east. Within the valley itself, it is likely that some views will be possible encompassing several wood pole supports, particularly from along the minor lane linking Ddol with Pont y blew, on the upper, western slope of the valley. Mature trees line the River Ceiriog watercourse, limiting visibility between east and west sides of the valley.

13.71 Land to the east of the Ceiriog valley in this area is generally between 100 and 130m AOD, and undulating. Land to the west rises for approximately 1.5kms to a local ridge of circa 140m AOD, immediately west of the A5(T). As the overhead line leaves the Ceiriog valley on the eastern valley side, rising from levels of around 40m AOD in the valley floor, wood pole supports on the upper slopes are likely to be visible from the rising land to the west, although views from the A5(T) are unlikely as it is contained within cutting or roadside woodland in this vicinity. Views may be possible from the roundabout where the A483 joins the A5, near the small hamlet of Halton. Visibility may extend to the northern boundary of Brynkinalt registered parkland, situated east of the A5(T).

13.72 The wood pole supports on the upper slopes of the Ceiriog valley are also likely to be visible in uphill views from within the valley, possibly forming skyline/horizon features as they cross Bramble Wood.

13.73 The above character area is illustrated in viewpoint photographs 11, 12 and 13 (Figures 13.7 and 13.8).

Principal Timbered Farmlands (formerly SP43 St Martin's)

13.74 Between the Ceiriog valley and the Shropshire Union canal, visibility is likely to be limited to two to three fields distant, with few opportunities for long views, due to the locally undulating ground and plentiful tree cover along hedges. Between the B5069 crossing and B5068 crossing the landscape becomes more open and larger in scale, with the possibility of longer distance views. Visibility is likely to be limited by the northern edge of settlement of St Martin's village, to the south, and by the land falling gradually northeastwards beyond Bryn Goleu and Pentre Morgan.

13.75 South of St Martin's, the ground is again locally undulating, with smaller fields and numerous hedgerow trees and occasional small woodland blocks likely to limit views to two to three fields distant. Views of the line are likely to be possible from some properties on the eastern edge of the village.

13.76 The above character area is illustrated in viewpoint photographs 14-21 inclusive (Figures 13.7 to 13.12).

Lowland Moors (formerly SP57 New Marton)

13.77 South of Wigginton, land falls south-westwards to a wide, flat-bottomed valley. As the overhead line would cross this shallow valley obliquely, views would be possible from both the valley floor, occupied by the Shropshire Union canal, and from the valley sides. Visibility would extend to the scattered farmsteads of Bronygadfa and Rhosygadfa in the west and to the small linear hamlet of New Marton in the east. The settlements are situated at the top of the shallow valley slope, and views from the flat, higher land beyond are unlikely. Within the valley it is possible that views of several wood pole supports would be possible, due to the relatively open nature of the large fields and lack of hedgerows, but these are likely to be largely backgrounded by rising land beyond.

13.78 This character area is illustrated in viewpoint photographs 22 and 23 (Figures 13.12 and 13.13).

Principal Settled Farmlands (formerly OH10a Gobowen)

13.79 South west of the shallow valley of the Shropshire Union canal the landscape is relatively open and gently sloping southwards towards the River Perry valley. To the west, views would be curtailed by Hillyards Plantation, and to the south by woodlands in the River Perry valley. Visibility of the overhead line is likely to extend over several large fields to the north and east, to the farmsteads of Top House Farm and Henlle.

13.80 This character area is illustrated in viewpoint photographs 24 and 26 (Figures 13.13 and 13.14).

Lowland Moors (formerly SP38 Halston Hall)

13.81 Visibility within the shallow River Perry valley is likely to be largely restricted by the mosaic of large woodland blocks in close proximity, and also by the proposed overhead line route being located within a young plantation woodland, or immediately adjacent the mature woodland Butt's Wood.

13.82 This character area is illustrated in viewpoint photographs 25 and 27 (Figures 13.14 and 13.15).

Principal Settled Farmlands (formerly OH10b Oswestry)

13.83 Between the River Perry valley and the A5(T) termination point, where the overhead line transfers to underground cable, the landscape in the immediate vicinity of the proposed overhead line is relatively flat and open, although both the B5009 Gobowen Road and North Drive, Twmpath are lined with mature trees. Visibility is likely to extend to the edge of the extensive complexes of Derwen College and Robert Jones & Agnes Hunt Orthopaedic and District Hospital, and to the edge of the residential estate of Park Hall, with woodland blocks largely limiting views from the Park Hall Farm visitor attraction.

13.84 The terminal support will be visible from the A5(T), although views from the road are unlikely to extend much beyond this structure. From the elevated vantage point of Old Oswestry fort it may also be possible to discern several wood pole supports. Similarly, the terminal support and those further east in open land may be visible from gently rising land west of the A5(T); visibility is unlikely to extend beyond the B4579, Oakhurst Road, which forms the eastern boundary of Brogyntyn Park registered parkland.

13.85 The above character area is illustrated in viewpoint photographs 28 to 31 inclusive (Figures 13.15 to 13.17).

13.86 In summary, the majority of the proposed overhead line would be likely to be visible over a relatively short distance, with visibility curtailed by vegetation. In some areas there would be a lesser degree of visual containment. These areas are:

- Between Pentre Bychan (B5605) and the A483(T), where there are opportunities for downhill views from rising land to the west, and from the former colliery spoil heaps at Hafod and Bersham;
- In the Park Eyton area, around the A539 crossing, where the landscape is less undulating and more open;
- Where the line crosses the upper, eastern slope of the Ceiriog valley in the vicinity of Bramble Wood to Pen-y-Bryn it is likely to be visible from both within

the Ceiriog valley and from rising land to the west, in the vicinity of Halton, some 2kms distant, east of the A5(T);

- In the Pentre Morgan area northeast of St Martin's village, where the landscape is more open;
- Within the shallow valley occupied by the Shropshire Union canal, where there are opportunities for views from higher land to the east and west, and the landscape of the valley floor is relatively open;
- Around Henlle, near Hindford, the landscape is relatively elevated, flat and open; and
- In the area between Park Hall and the Orthopaedic Hospital, land is flat with a lower amount of tree cover than generally is the case, and there is rising land to the west (west of the A5(T)), including Old Oswestry fort.

Nature of effects generally

13.87 All visual effects of the operational phase of the proposed overhead line have been assessed as adverse, permanent, but reversible. Additional effects during construction include tree removal/reduction, access tracks, storage compounds, vehicle and personnel movements. Tree removal/reduction is considered an adverse, permanent and irreversible effect. The locations of construction access routes, temporary storage areas for dispersal of plant and equipment and additional working areas required for stringing operations are not yet known (it is anticipated that temporary storage areas will primarily be within farmyards, subject to landowners agreement). The effects of these have not been assessed. All other construction effects are considered adverse, but temporary.

Assessment of effects upon selected viewpoints

13.88 A total of 36 viewpoints were assessed. Viewpoint locations are illustrated in Figure 13.1. Nine of these viewpoint locations have also been selected for photomontage images of the proposed line. The viewpoint photographs and photomontages, with accompanying plans illustrating the location and direction of view, are illustrated in Figures 13.2 to 13.28. Photomontages have been prepared for illustrative purposes only; all assessment of effects was undertaken through field survey.

13.89 The assessment is based upon the optimised proposed route, as outlined in Chapter 11: The Proposed Route. Where positioning the overhead line in a different position within the tolerance corridor is considered to affect the assessment, this is reported.

13.90 Table 13.4 contains a summary of the existing views from the selected viewpoints, along with an assessment of the sensitivity of the receptor (which includes an evaluation of the importance of the receptor). The table includes a description of the proposed change in the view and the anticipated magnitude and significance of this. The distances between the viewpoint and the proposed overhead line vary from those in Table 13.2 as they have been measured along the centreline of the view, rather than to the nearest point of the proposed overhead line. They also relate to the optimised proposed route, rather than a tolerance corridor.

13.91 The assessment of individual specific effects on the selection of viewpoints, as outlined above, aids general conclusions regarding the visual effects of the proposed development. This summary view is presented in the final stage of the assessment.

Table 13.4: Assessment of effects upon selected viewpoints

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
1	View from Wrexham Road (B5605), Pentre Bychan, looking east towards Hafod community woodland	Start of OHL- *represents view from edge of settlement of Pentre Bychan, where several properties along B5605 have open views eastwards*	240mW	This viewpoint represents views from the edge of a residential area, where houses lining the west side of the B5605 have open views eastwards and downhill. The receptor is considered highly sensitive. The view is important at a local level.	Existing view The viewpoint is located at the junction of Wrexham Road (B5605) with Corkscrew Lane. The view is open and long distance, across flat grazing land. The dominant feature of the view is the artificially raised landform of the former Hafod tip. To either side of this mound, the horizon is well wooded. In the foreground there are only occasional hedgerow trees rising above trimmed thorn hedges. Low voltage power lines form a component of the foreground, and the high voltage portal line supports are visible in the distance. Proposed view This viewpoint is one field distant from the point at which the power line would change from underground cable to overhead line. The support structure for this changeover (4 poles) would form an element in the foreground of the view. The supports of the line, as it continues eastwards towards the former Hafod tip, would also be visible (for a distance of approximately 600m). There would be little screening of views of supports, but an element of backgrounding provided by mature tree cover and rising land. The proposed overhead line would not form an uncharacteristic element within the view, due to presence of existing lines.	Medium	Moderate
2	Hafod-y-bwch, Corkscrew Lane, looking N (towards Bersham tip)	Adjacent Hafod community woodland, publicly accessible SAC site	130mW	Users of this rural lane are considered to have a Low sensitivity, as their attention would be focussed primarily on negotiating the narrow road. (Note: view from community woodland considered elsewhere). The view is important at a local level.	Existing view The viewpoint is situated on the minor road of Corkscrew Lane, immediately north of the property of Hafod-y-bwch, at a field gate. The lane is bounded by tall hedges, screening ground level views from elsewhere. Note the view northwards from the residential property is completely screened by other farm buildings. (There may be views eastwards towards the line from the property.) The level view comprises large pasture fields bounded by gappy, overgrown hedgerows with occasional mature trees. The horizon looking eastwards appears almost continuously wooded. This is young woodland associated with the A483(T), and the crowns of occasional mature trees rise above the general woodland level. The angular form of Bersham tip (colliery spoil) forms the dominant feature in views. The view is rural, with no built development obvious. However, the upper parts of the supports of two high voltage power lines are visible above the wooded horizon. Proposed view The overhead line would pass across the foreground of this view, with no intervening vegetation. To users of the lane, this would be a glimpsed	Negligible	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
					view through a gap in the hedge. Only the conductors (wires) and the upper part of supports are likely to be visible from along most of the lane in this vicinity.		
3	Road bridge over A483(T) near Ty Coch Farm, looking S	Elevated viewpoint – gives understanding of lower level views from A483(T)	100mE	This viewpoint has been selected to represent views from the A483(T) in this vicinity. As such, the sensitivity assigned to road users is low. The view is considered important at the local scale. Although there may be large numbers of receptors, the view is of a very transient nature.	Existing view The view comprises a foreground of medium to large pasture fields enclosed by trimmed hedges and numerous hedgerow trees, with the middle distance/horizon having a well-wooded appearance. Land rises gently southwards, extending the depth of the wooded horizon. From this elevated viewpoint, the A483(T) dual carriageway forms a major element in the rural scene. To the west of the dual carriageway, several (8-10) steel lattice support towers of a high voltage line are clearly visible above the horizon. To the east, the high voltage portal line is distantly visible, only the upper part of the support being visible above the horizon. Views from the main road are a mixture of open and enclosed, as they are limited by vegetation/hedges adjacent the highway. Proposed view The proposed line will cross the A483(T) two fields distant from the viewpoint, and will form a small but noticeable component of the view. Like the portal line, only the upper parts of support structures will be visible, due to a combination of intervening vegetation and backgrounding by rising land. The support structures adjacent to the main road, and possibly one or two either side of this, are likely to be visible, but beyond this distance southwards the line is unlikely to be discernible.	Low	Minor
4	View from Open Farm, Hafod-y-bwch (near Middle Sontley) looking W	Visitor facility recreational resource	400mE	Users of outdoor recreational facilities such as the open farm are considered Moderately sensitive, as they have rural expectations, but their attention is focussed on farm activities, rather than on appreciation of views. The view is considered important at a local scale.	Existing view The car park of the Open Farm has open views westwards towards the former Hafod tip. Land rises gently to the west of the viewpoint, preventing views of road traffic or roadside vegetation. Large pasture fields, trimmed thorn hedges and occasional hedgerow trees form the main elements of the view. Low and high voltage power lines cross the view. Two or three steel lattice support towers, over 1km distant, are largely visible above the horizon. A support for the portal line is less visible due to lower height and intervening trees, despite being much nearer the viewpoint (200m). Proposed view The proposed line will follow an alignment similar to that of other power lines crossing the view, between the portal line and other high voltage lines. Despite being double the distance from the viewpoint, compared to the portal line, it is likely that the proposed line will be similarly visible, due to its location on slightly higher ground and the more noticeable nature of the support poles (solid wood rather than steel lattice).	Low	Minor
5	View from		230mW	The sensitivity of users of	Existing view	Low	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
	B5426 near Eddisbury Grange, looking E			the minor road is considered Low. The view is of local importance.	There is no view eastwards from the house of Eddisbury Grange, as large scale farm buildings form a screen. The view along the minor road eastwards is slightly downhill across large pasture fields. There is a continuous line of mature trees in the middle distance, associated with Black Brook (500m distant), and a more distant wooded horizon. The red and white of One Oak Cottages, adjacent Black Brook, forms a contrast with the generally green nature of the view. Proposed view The proposed line will cross the view approximately mid-way between the viewpoint and Black Brook, and will be openly visible to both the north and south for a total of some 700m. Beyond this, woodlands or tree lines are likely to have a screening effect. Whilst the wooded horizon will provide a degree of backgrounding, the upper parts of support structures and the wires themselves will be visible above the horizon.		
6	View from adjacent The Crimbles, between Crabtree Green and Park Eyton, looking SW	Property close to route	140mE	The sensitivity of this receptor is considered High. As the viewpoint represents a single, private, view, it is of local importance only.	Existing view The view westwards from near The Crimbles is slightly uphill, over pasture fields with trimmed thorn hedges. There are occasional hedgerow trees, resulting in a partly wooded horizon. Woodland cover increases south of the lane, in association with Gefelieu Brook. Proposed view The proposed line crosses the view at right angles to the lane. It would be openly visible to the north west, forming a foreground feature with some backgrounding but little intervening screening. The degree of screening increases in the vicinity of the lane and to the south, with the line being largely screened south of the brook	Medium	Minor
7	A539, near Park Eyton Lodge, looking E	Listed building, edge of Wynnstay Park registered parkland	425mW	The sensitivity of this receptor is considered High as it represents the view from a private parkland (where receptors could reasonably be expected to focus their attention on views) and a residential property. The view will also be experienced by large numbers of users of the A539, travelling eastwards. The importance of the view is considered Regional, relating to the Grade I designation of the	Existing view The view eastwards from near Park Eyton Lodge is across open pasture fields and slightly uphill, to a gentle ridge some 300m distant. In the middle distance, before the top of the ridge, there is some mature tree cover along the roadside and around a pond. The ridge forms a horizon feature south of the road. To the north, tops of mature trees form a partially wooded horizon beyond the ridge. Low voltage power lines are a component of the view, particularly to the south. Proposed view The proposed line will cross the A539 to the east of the crest of the gentle ridge, and will be afforded some screening by intervening trees in the vicinity of the road crossing. To either side of this, it is likely to form a noticeable skyline feature, more particularly to the south where there is less backgrounding available. From this viewpoint, approximately 1km of the line is likely to be visible (circa 10 supports).	Low	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
				registered parkland, and the designated status also of the building. The viewpoint is within an area considered of outstanding visual quality within Wrexham LANDMAP, but the land within the view is not.			
8	View from edge of Pen-y-lan hamlet, looking NW towards Crab Mill	Edge of small settlement	595mE	The sensitivity of this receptor is High, as the view is from residential properties. The view is considered of greater than local importance, as it encompasses several elements of a designated parkland (Wynnstay) in the distance. The view incorporates an area considered of outstanding visual quality within Wrexham LANDMAP, but the viewpoint is outside this area. It is assigned District level importance.	Existing view There is an open, slightly downhill view northwestwards from the edge of Pen-y-lan hamlet. The foreground comprises large pasture fields, with only remnants of hedge. Lanes retain clipped hedges intact. There are few hedgerow trees in the foreground, but several in the middle distance. Land rises slightly in the distance, to a continuously wooded horizon formed by The Drive Wood, part of the Wynnstay Estate. Within this wooded horizon, the listed buildings of Wynnstay Kennels and Bryn House are discernible. Further west, the red brick of Crab Row cottages is visible against a ridgeline/horizon formed of rising pasture land with intermittent tree cover. In the distance, beyond Crab Row, steel lattice towers of existing high voltage lines are just visible on the horizon. Proposed view The proposed alignment east-west some 600m distant will be seen almost entirely against a wooded backdrop. An approximate length of 1km will be visible. The line is likely to form a small component of the view, most noticeable to the east of Bryn House, and west of Crab Row, where there is less background vegetation.	Low	Minor
9	Crab Row Cottages, Pen-y-lan, looking NW towards Dininlle Cottages	Properties	210mE	The sensitivity of this receptor is High, as the view is from residential properties. The view encompasses several elements of a designated parkland (Wynnstay) in the distance. The view incorporates an area considered of outstanding visual quality within Wrexham LANDMAP, but the viewpoint is outside this area. It is assigned District level importance	Existing view Level foreground views of pasture fields enclosed by trimmed hedges; numerous mature trees, both in hedgerows, small groups and individually, creating parkland character. The horizon to the north is formed by continuous woodland (The Drive Wood/Kennel Wood), whereas to the west the land rises to a low ridge. The ridge is predominantly open, but partially screened by Dininlle Cottages and trees in the middle distance. Tops of tree groups are visible beyond the ridge, and tops of steel lattice towers of existing high voltage lines are just discernible, approximately 700m distant. Proposed view The route crosses the lane between Dininlle Cottages and Kennel Wood, and here will be viewed in the middle distance against a wooded backdrop. Further west, the route crosses the ridge behind Dininlle Cottages (and so will be largely screened from view) continuing	Low	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
					southwards utilising a shallow valley west of the ridge. The wires and upper part of supports are likely to be distantly visible beyond the open ridge.		
10	Park Farm entrance, Pentre (N of River Dee) looking E	Residential property. View incorporates 2 other power lines	520mW	The sensitivity of this receptor is considered High. Views southeast are towards the locally designated landscape of the Dee valley, but the viewpoint is outside the designation. As the viewpoint represents a single, private, view, it is assigned local importance only.	Existing view Park Farm is situated at the end of a low ridge dividing tributary valleys to the River Dee; land falls to the south, east and west. The viewpoint is some 100m west of the farmhouse, at the entrance to the farm. From here, the view eastwards is of a hedged drive, leading slightly uphill to a 2 storey farmhouse with several mature trees clustered around. Beyond the farmhouse and lower farm buildings, the only things visible are two high voltage power lines, as land falls away to the east. In more distant views towards the Dee valley, the woodland associated with this valley forms a horizon feature. Approximately 10 steel lattice towers are visible. Proposed view The proposed line is situated beyond the two existing high voltage lines east of Park Farm; this section is likely to be distantly visible, but only conductors and the top portion of support structures will be evident. Further south, the proposed line will cross beneath the existing power lines on land at a lower level/ sloping away from Park Farm. The line is likely to be visible, and the upper parts of support structures, but largely backgrounded by vegetation associated with the Dee valley and its tributaries, and seen in conjunction with existing power lines.	Negligible	Minor
11	Forge Farm, Pont-y-Blew, looking E over River Ceiriog valley	Locally designated landscape	340mW	Views are considered from the minor lane adjacent Forge Farm, so receptors comprise users of the lane, rather than residential receptors. Sensitivity of walkers and horse-riders is considered high. Motorists will be focussed on negotiating the narrow lane, and are consequently of low sensitivity. The higher sensitivity is assigned overall. The viewpoint is within and surrounded by the locally designated landscape of the Ceiriog valley, one which is recognised in Wrexham LANDMAP as	Existing view The viewpoint is situated adjacent the barns of Forge Farm, on a minor road which follows the valleyside of the River Ceiriog. (Views northeastwards from the farmhouse are likely to be limited by the adjacent buildings.) The foreground pasture drops steeply to the Ceiriog, which is flanked by riverside woodland. Beyond this, steeply sloping pasture rises to a wooded horizon (Bramble Wood) some 600m distant. The wider view encompasses more substantial wooded areas forming the predominant land cover of the Ceiriog valley. The river itself is visible; other elements of the view include Riverside Cottage at Tenement and a high voltage power line beyond the eastern valley side. Proposed view The proposed line crosses the Ceiriog beyond Riverside Cottage, necessitating some tree removal. From this viewpoint, intervening vegetation will largely screen the river crossing. The line will then rise across the pasture land on the eastern side, appearing to follow the woodland edge, and being largely backgrounded by the woodland, until it utilises an existing gap in Bramble Wood to leave the valley. At this point, depending upon exact positioning of supports, it is likely to be	Low	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
				verging on outstanding visual quality. It is assigned District level importance.	visible as a horizon feature, but of a similar height to, rather than rising above, the adjacent woodland.		
12	Pont Llygoden (road bridge) over River Ceiriog, looking NW	Locally designated landscape	120mE	Views from the bridge over the Ceiriog are severely constrained by presence of mature streamside woodland. The actual viewpoint is some 50m to the west, at the intersection of lanes from Halton and Pont-y-Blew. . Sensitivity of walkers and horse-riders is considered high. Motorists will be focussed on negotiating the narrow lane, and are consequently of low sensitivity. The higher sensitivity is assigned overall. The viewpoint is within and surrounded by the locally designated landscape of the Ceiriog valley, one which is recognised in Wrexham LANDMAP as verging on outstanding visual quality. It is assigned District level importance.	Existing view From here there is a wide view westwards, ranging from the Dee valley in the north to the Ceiriog valley in the south. The foreground view is, however, foreshortened as it comprises a steeply rising grass slope, with a horizon formed by a low clipped hedge apparently on the top of the slope, some 200m distant. Woodland associated with the Dee and Ceiriog valleys forms a lower horizon feature to the north and south. Towers of high voltage power lines crossing the Dee are distantly visible above the woodland. The upper part of the property Hillside, at Tenement, is visible to the south, with a wooded backdrop. Proposed view The proposed line will traverse this view north to south utilising an alignment low in the landscape. Whilst it will be openly visible in the foreground for approximately 800m, it will be largely backgrounded by either woodland or rising land.	Medium	Moderate
13	View from Tenement hamlet, Ceiriog valley, looking NE	Properties and Locally designated landscape	60mW	The sensitivity of these receptors, which comprise viewers within 2 residential properties and users of the minor lane, is considered high overall. The viewpoint is within and surrounded by the locally designated landscape of the Ceiriog valley, one which is recognised in	Existing view The two properties that comprise Tenement are situated alongside the lane which runs on the west side of the Ceiriog valley, just above (10m) the river level. The view eastwards is of pasture sloping down to riverside woodland in the foreground, with the horizon formed by extensive woodland on the upper eastern slope of the Ceiriog valley. There are glimpses of lower pastures through the riverside woodland (less likely in summer). A single steel lattice tower, situated at the top of the slope near Lower House Farm, is prominent on the horizon. Proposed view The proposed route will cross the foreground view following a N-S	Medium	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
				Wrexham LANDMAP as verging on outstanding visual quality. It is assigned District level importance.	alignment. Due to its situation low in the landscape, it will be largely backgrounded by woodland. West of the river, approximately 500m length will be visible, most noticeably where the line crosses the lane. Tree removal required to cross the River Ceiriog is unlikely to appear as a gap, as the river follows a sinuous/winding course in this vicinity, creating a layered wooded effect. The alignment east of the river crossing will not be noticeable (though it may be discernible), screened by riverside woodland and with a wooded backdrop.		
14	View from Maelor Way, E of Bramble Wood, looking E	Recreational route	300mW	Users of this public footpath are considered highly sensitive receptors. The importance of the view is enhanced due to the promotion of the path as a long distance recreational route. The viewpoint is within and surrounded by the locally designated landscape of the Ceiriog valley, one which is recognised in Wrexham LANDMAP as verging on outstanding visual quality. It is assigned District level importance.	Existing view In this vicinity the Maelor Way follows the upper edge of woodland along the higher slopes of the Ceiriog valley. Views eastward are uphill across large, fenced fields with remnant hedgerows and hedgerow trees in places. The view is relatively short, some 2-300m, to a ridgeline horizon dotted with mature trees. An existing high voltage power line is visible above the horizon. It is approximately 400m distant, though the two towers visible are largely screened by trees. Proposed view The proposed line will be most visible where it emerges through the gap in Bramble Wood and traverses rising land before crossing beneath the existing high voltage line. The conductors will be visible above the horizon, and a degree of backgrounding of supports will be provided by the discontinuous mature trees on the horizon. Further east, only the upper parts of supports are likely to be visible, as the view is curtailed by rising ground.	Low	Minor
15	Top House Farm, Pen-y-bryn (near Kennels) looking W	Listed building	270mE	The sensitivity of viewers within this property is considered high. The combination of listed building status and the fact that the viewpoint is on the edge of the designated landscape of the Ceiriog valley, with the view westwards over this landscape, results in a District level of importance.	Existing view There are extensive views westwards from the fieldgate/PROW access opposite the listed buildings at Top House Farm. Foreground views are downhill across pasture fields, with the farmbuildings of Lower House Farm forming a main feature of the foreground. Land rises gently in the middle distance westwards to a low ridge. Beyond this, the settlement of Chirk is hidden, but smoke plumes from the factory chimneys at Chirk are visible. Further west, land rises again to the Welsh Hills, which form a horizon feature. A tower and conductors of a high voltage power line are visible above this horizon. Proposed view The proposed line will cross beneath the high voltage power line, just south of (to the left of) the tower described above. In views westwards, it will be backgrounded by rising land beyond, and is unlikely to break the horizon. It will form a small component of a relatively complex and extensive view. As the proposed line traverses higher land to the south of the viewpoint, it is likely to become increasingly visible above the horizon	Low	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
					of clipped hedgerow (although views southwards are into the sun), one to two fields distant.		
16	Footpath adjacent The Malt House, looking SE	Property close to route; public footpath	110mE	The sensitivity of both types of receptor (residents of a single property and footpath users) considered at this viewpoint is High. The viewpoint is of local importance.	Existing view The view is slightly downhill across a very shallow valley, before land rises gently in the distance to a wooded horizon. The foreground and middle distance comprises large pasture fields, enclosed by trimmed hedges with numerous large hedgerow trees. There are also several woodland blocks, giving an overall well treed appearance. Proposed view The proposed line will be openly visible in foreground views from the public footpath from the point it crosses the minor road to the next field boundary (c. 200m), with an increasing degree of backgrounding as it descends into the shallow valley. Beyond the field boundary, hedgerow trees will provide a high degree of screening, and the greater depth of backgrounding is likely to prevent this section forming a horizon feature from the viewpoint.	Medium	Minor
17	Ifton Heath to Street Dinas road, B5069, adjacent to Gilrhos, looking N	Property close to route	85mW	The property Gilrhos is orientated to view east and west, and appears to have no views northwards. Accordingly the viewpoint on the B5069 is assigned a low sensitivity (receptors being road users), and of importance at a local scale.	Existing view The view along the road northwards is slightly uphill, and is effectively curtailed and enclosed by tall hedgerows and hedgerow trees. A property some 200m northwards is just discernible through the vegetation. The land to either side of the road is relatively flat. Proposed view The proposed line will be briefly visible to road users as it follows an alignment across the road between the two properties. Views of the line on either side of the road will be short, curtailed by roadside hedges and topography.	Low	Minor
18	Footpath N of Mount Bradford Lane, St Martin's, looking NE	Edge of St Martin's settlement	215mW	The sensitivity of footpath users is considered high. Given its proximity and link to the edge of settlement, it is likely to be well used. The viewpoint is of local importance.	Existing view The viewpoint is 50m from the junction of the footpath with Mount Bradford Lane, at a local high point. Land falls gently back to the road, and north-eastwards. The view comprises only the immediate pasture field, enclosed by tall hedgerows and the buildings of the property Coedfa. The upper parts of trees on the next field boundary eastwards are visible, indicating that the ground is falling gently away. Proposed view The proposed route will cross the view in a northwest to southeast alignment, some 200m distant and with 2 intervening field boundaries. From this elevated viewpoint, it is likely that the conductors and upper parts of support structures will be visible as horizon features, intermittently screened by intervening vegetation, for a distance of 3-400m.	Medium	Moderate
19	Ellesmere Road fishing pond, near	Edge of St Martin's settlement	150mW	The sensitivity of users of the fishing pond is considered low, as	Existing view Foreground views northeastwards from the fieldgate/car park entrance from Ellesmere Road are level, over large, rolling pasture fields, to a	Medium	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
	Oakfield Farm, looking NE			attention will be focussed on the recreational activity, rather than the view. The viewpoint is of local importance.	horizon formed by the upper parts of clipped hedges and occasional field boundary trees. This indicates that land is at a lower level in the middle distance. Only the rooftops of the farmbuildings of Bryn Golau are visible. Proposed view The proposed line will cross the foreground, within the same field as the fishing pond car park. It is likely to form a main feature in the view, with conductors and the majority of each support being visible above the horizon formed by clipped hedges. It is estimated that the extent of line visible will be approximately 500m, from west of Coedfa farmhouse, to the point at which the line crosses Ellesmere Road.		
20	Pentre Morgan, looking W along Ellesmere Road	Listed building	450mE	The sensitivity of residents within the building is considered high. Importance of the view is enhanced due to the listed status of the building, and is considered to be important at a District scale.	Existing view Extensive, level views over gently rolling large pasture fields enclosed by substantial hedgerows with occasional hedgerow trees. Land falls away after 2 fields distant, indicated by only tops of trees being visible. Beyond this, a distant horizon is formed by the Welsh Hills. The view is criss-crossed by low voltage wood pole mounted lines. Proposed view The proposed line will occupy a small proportion of the middle distance view directly westwards. The section of route north of its crossing of the B5068 Ellesmere Road will be visible beyond and between scattered mature trees, with a degree of backgrounding provided by the Welsh Hills.	Low	Minor
21	Footpath/lane intersection, E of Wigginton Farm, looking W	Public rights of way	80mE	The sensitivity of footpath users is considered high. The viewpoint is of local importance.	Existing view Panoramic downhill views westwards from footpath west of minor lane, comprising a foreground of large pasture fields enclosed by clipped hedges, with few trees. The foreground also contains Wigginton farmhouse and associated outbuildings, and adjacent single storey property, Ponderosa. In the middle distance land rises slightly, and appears more wooded. The Shropshire Union canal is not visible, situated in low-lying ground between the foreground and middle distance ridges. The horizon is formed by rising land of the Welsh hills in the distance; the east-facing slopes displaying a mosaic of pasture fields and small woodland areas. Proposed view The proposed line will cross the view in a generally north-south direction, at a lower level than the viewpoint. There will be a degree of backgrounding to supports, but conductors are likely to be visible above the horizon. Support structures will be openly visible to the north-west, and partially concealed behind a clipped hedge in views westwards. Extent of the overhead line visible will reduce as the line descends into the Shropshire Union canal valley. Additionally, these views will be	Medium	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
					backgrounded by the distant horizon.		
22	Shropshire Union Canal towpath S of Pen-y-bryn, looking SE	Recreational route	265mW	The sensitivity of users of the canal towpath (and canal) is considered High. The importance of the view is enhanced as the canal is a well known and popular tourist attraction. Consequently, the view is considered important at a Regional scale.	Existing view The view southeastwards along the canal towpath is level, and open. Views are channelled along the line of the canal, which takes a gentle curve southwards. A low horizon is formed by the tall hedgerow which bounds the eastern side of the canal towpath. Through occasional gaps in the hedgerow, It is possible to see that land rises gently to the east. To the south the land is flat and open marshy grassland, with a horizon formed by a combination of landform and lines of mature trees (predominantly associated with hedge lines). Several supports for low voltage power lines are distantly visible on the horizon. Lock Cottage, at New Marton Locks, is the only building discernible, in the distance. Proposed view The proposed line will cross the canal in the middle distance, midway between the viewpoint location and New Marton Locks. Supports to the west of the canal will be openly visible, partly backgrounded in places by distant tree lines. Supports to the east of the canal are likely to be largely screened by the canalside hedgerow. The conductors will be visible above the low horizon where they cross the canal, and to the west of this. West of the canal crossing, the line will be visible receding into the distance, rather than crossing the view.	Low	Moderate
23	New Marton Bridge/Lock, Shropshire Union Canal, looking NW	Recreational route; listed building adjacent lock (Lock Cottage)	280mE	The sensitivity of users of the canal towpath (and canal) is considered High, as is the sensitivity of residential receptors at Lock Cottage. The importance of the view is enhanced because the canal is a well known and popular tourist attraction, and the building from which views can also be appreciated is listed. Consequently, the view is considered important at a Regional scale.	Existing view There is an extensive view northwards from the bridge over the canal. The foreground is flat and poorly drained pasture, punctuated by drainage ditches and occasional tree groups. In the middle distance, to both the east and west, the land rises gently to a low horizon of grassed slopes and hedgerow trees. In views northwestwards, the Welsh Hills are distantly visible. The canal itself is the dominant visual feature, drawing the eye around a gentle curve northwestwards to the hills. Proposed view Looking north from the bridge, the proposed line will be visible in the middle distance as it descends the valley slope from Wigginton, crosses the canal and continues southwards. Effective backgrounding is given by the valley slope to the east and by distant hills to the west, but there is little intervening vegetation to screen views.	Medium	Moderate
24	Intersection of footpaths south of Top House Farm,	Public rights of way	125mW	The sensitivity of footpath users is considered high. The viewpoint is of local importance.	Existing view Panoramic, level view to the south and east, over large pasture fields bounded by trimmed thorn hedges, with only occasional hedgerow trees. Distant views to the east of rising land around New Marton. In the middle	Medium	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
	Rhosygadfa, looking SE				distance, the Shropshire Union canal and the shallow valley in which it sits is not visible, due to topography. The distant horizon to the southeast and south appears slightly downhill and is almost entirely wooded. Occasional farmhouses (e.g. Henlle Farm) are notable elements in the view. Proposed view The proposed route will skirt around this viewpoint from east to south, approximately 130m distant, crossing adjacent fields. It will be visible from east of Top House Farm to approximately its crossing point of the lane between Iron Mills and Hindford – a distance of of 1km. The alignment is set at a lower level in the landscape than the viewpoint. For the most part, only the upper parts of supports, and the conductors, will be visible above intervening hedges. Rising land to the east and distant woodland to the south will provide some backgrounding.		
25	View from road bridge over River Perry, near Fernhill Pastures SSSI, looking SW	Signed cycle route	160mW	The sensitivity of cyclists using the route is considered moderate, as whilst there will be an appreciation of the landscape, some attention will require to be focussed on negotiating the narrow lane. Given that the lane is part of a signed cycle route, publicly advertised, the view is considered to be of District importance.	Existing view Views to the southwest are blocked by a continuous line of riverside trees along the River Perry. Views west and north-west are uphill towards a horizon formed by the tall hedges which line the Iron Mills to Hindford lane. There are occasional large hedgerow trees. Proposed view The proposed line will be visible from where it crosses the lane between hedgerow trees to its crossing of the River Perry – a distance of some 400m. The more elevated, northern section will be visible above the horizon formed by laneside hedges. The approach to crossing the River Perry will benefit from an increasing amount of backgrounding, both from sloping ground and woodland.	Low	Minor
26	PROW adjacent Henlle, looking NW	Elevated right of way	580mE	The sensitivity of footpath users is considered high. The viewpoint is of local importance.	Existing view Wide views slightly downhill and westwards comprise a foreground of large, regular pasture and arable fields subdivided by trimmed thorn hedges, a wooded middle distance, where only the upper part of Hillyards Plantation woodland is visible due to its position lower in the landscape, and a distant horizon above this formed by the Welsh Hills. Proposed view Approximately 1km of the proposed line will be visible from this elevated viewpoint, between approximately Top House Farm and the River Perry. It will be most prominent in views northwest, with conductors visible above the horizon. Further south, the line will be largely assimilated within the background woodland and hills.	Medium	Minor
27	View from lane north of Fernhill Pastures	Designated nature conservation site, adjacent	On	Fernhill Pastures SSSI is not publicly accessible. The sensitivity of cyclists using the route is	Existing view The foreground comprises arable land sloping southwards to the River Perry. This valley is extensively wooded, with woodland forming the horizon in views southeastwards. Views further west comprise woodland	Medium	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
	SSSI, looking S	route; signed cycle route		considered moderate, as whilst there will be an appreciation of the landscape, some attention will require to be focussed on negotiating the narrow lane. Given that the lane is part of a signed cycle route, publicly advertised, the view is considered to be of District importance.	in the foreground, and pasture fields on rising land in the middle distance, separated by trimmed low hedges. Occasional houses are visible in the distance, as is traffic using the Whittington Road (discernible by movement). Low voltage power lines are visible, entirely backgrounded by woodland and rising land. The Welsh hills rising in the distance form a backdrop to this view, and a horizon above woodland associated with the River Perry. Proposed view This viewpoint is looking along the line of the proposed route, as it descends to cross the Perry valley, skirts alongside the edge of woodland and rises in the distance to cross Whittington Road. Supports and conductors are likely to be openly visible above the horizon in foreground views, but increasingly benefit from backgrounding with distance. Crossing the River Perry will necessitate some removal of the continuous riverside tree belt, and the gap formed will be a noticeable feature, accentuating the position of the overhead line.		
28	From Whittington Road (B5009), Gobowen, near Oak Mill, looking NE	Signed cycle route; elevated viewpoint	1170mW	Road users on the B5009 are considered to have a Low sensitivity. As the road is part of a signed cycle route, publicly advertised, the view is considered to be of District importance.	Existing view The slightly downhill view encompasses a gently undulating landscape of shallow valleys and low ridges. The foreground comprises large, hedged pasture fields with a few large trees. The River Perry valley is in the middle distance, marked by substantial woodland plantations. In easterly views, only the tops of trees in this valley are visible, due to intervening higher ground. The distant horizon is formed by rising land, with a mixture of pasture and woodland. A wood pole overhead line crosses the view in the middle distance, backgrounded by Hillyards Plantation woodland, in the River Perry valley, and rising land in the distance. Proposed view The proposed line may be distantly visible in a small part of the view, from south of Hillyards Plantation to north of Great Fernhill (4-500m), but like the existing, closer line, will be backgrounded by rising land and woodland.	Negligible	Minor
29	On B5009 at entrance drive to Great Fernhill, looking SE	Listed building	100mW	It is not possible to obtain a view from adjacent Great Fernhill residential property and listed building without accessing private land. This viewpoint gives an appreciation of the view from the property, and so is assigned a high sensitivity, and an importance of district level due to the	Existing view (P1290194-196) The foreground, slightly downhilll view is of open, undulating farmland comprising large fields. Field boundaries tend to be post and wire fencing, except adjacent to the B5009, which is bounded by a stone wall and mature trees, giving a parkland character to the landscape. There is a continuously wooded backdrop, the woodland being at a lower level than the viewpoint, being within the River Perry valley. The farm buildings of Great Fernhill nestle at the edge of the woodland, and are also set lower in the landscape. The farm buildings largely obscure views of the house (screening views westwards from the house). A low voltage power line crosses the view, crossing the drive nearer to	Medium	Moderate

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
				designated status. It is evaluated as a private view, rather than that from the public road.	the viewpoint than to Great Fernhill. It is openly visible in the foreground, with some backgrounding provided by woodland. Proposed view The proposed line will cross the drive to Great Fernhill using an alignment similar to the existing line (existing line assumed to be locally diverted), and so will appear as an element of the foreground view. Immediately to the east of the B5009, the conductors and upper parts of supports are likely to be visible above the wooded horizon, though mature trees along the roadside will provide an element of screening.		
30	Footpath from North Drive, Park Hall, looking SW	Public footpath	65mW	The sensitivity of footpath users is considered high. The viewpoint is of local importance.	Existing view The view southwestwards is across a foreground of level, regular shaped fields bounded in part by low trimmed hedges. The view is enclosed by woodland north of Park Hall Farm, and more distantly by the elevated landform of Old Oswestry Fort, and hill slopes further west. Roofs of houses are visible in the middle distance to both north and south. Wood pole mounted overhead lines form a component of the middle distance view, though these are largely backgrounded. Proposed view The proposed line will form a component of the foreground from this viewpoint, as it emerges from behind trees lining North Drive. It will be partially backgrounded by woodland and distant hills, but appear above the horizon level formed by woodland and Old Oswestry Hill fort. The line will be visible westwards to the point at which it is transferred to underground cable, adjacent the A5, a distance of some 700m from North Drive. With increasing distance from the viewpoint there will be an increasing amount of backgrounding.	Medium	Minor
31	View from B5069 south of Five Crosses roundabout (with A5), looking SE	Transfer point of OHL to cable	225mW	The sensitivity of road users approaching the roundabout is considered low. The view is of importance at a local scale.	Existing view From the B5069 views eastwards are dominated by the A5(T) road corridor, lighting columns and traffic, together with foreground views of steel towers of a high voltage line which runs parallel and immediately west of the main road. Views are level over fields, with no views of land east of the A5(T) corridor. A large block of woodland immediately east of the road forms a horizon feature. Proposed view The terminal gantry (4 pole structure) of the proposed overhead line is likely to be visible between the foreground steel lattice tower and woodland block adjacent the A5(T). Lower parts of the structure will be screened by roadside mounding and vegetation. It may be possible to see the conductors and subsequent supports to the east (upper parts of one or two at most) above roadside vegetation, though these will form a small component of the view.	Low	Minor
32	View from Old	Scheduled	945mW	The sensitivity of	Existing view	Negligible	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
	Oswestry Fort, looking NE	Monument; elevated viewpoint		recreational users of the publicly accessible monument is considered high, as their attention is likely to be focussed on views. The view is considered to be of District importance, relating to the designated status of the fort.	Panoramic and long distance downhill views over gently rolling farmland, with a generally well wooded appearance created by small woodland blocks and numerous layers of hedgerow trees. Built development (Park Hall and the hospital at Twmpath) forms a small component of middle distance views. Several power lines cross the foreground of the view, but do not appear above the horizon. Proposed view From the fort it is possible to see the fields between North Drive and the A5(T) in the middle distance. This section of the proposed line would be visible, but entirely backgrounded by the land beyond. The line would form a very small component of the view		
33	View from Hafod Community Park (Johnstown Newts Sites SAC) looking NE	Recreational site, elevated viewpoint	265mW	The sensitivity of recreational users of the park is considered high, as their attention is likely to be focussed on views. The view is considered to be of District importance, relating to the recreational status of the park.	Existing view There are extensive downhill views north and east from this viewpoint, to a horizon formed by low, rolling Welsh hills to the north, and to a distant horizon formed by Frodsham and Helsby hills to the east. Features in the middle distance comprise the settlement of Pentre Bychan, the distinctive landform of Bersham tip, and massed built development of Wrexham. The foreground is composed of large pasture fields enclosed with low, clipped hedges, with relatively few trees. Also in the foreground, there are glimpses of moving traffic using the A483(T), though the road surface itself is screened by roadside planting. Two high voltage power lines form small components of the complex view northeastwards, supports being entirely backgrounded when viewed from the elevated vantage point. Proposed view The proposed line will form a very small component of mid-distance views northwards, entirely backgrounded by the rising land beyond. In views north-eastwards, it is anticipated that any view of the proposed line would be screened by foreground trees, as the proposed alignment is close to the foot of the elevated landform on which the community park is based.	Negligible	Minor
34	View from top of Picnic Mountain, Hafod Community Park, looking SE	Recreational site, elevated viewpoint	1150mW	The sensitivity of recreational users of the park is considered high, as their attention is likely to be focussed on views. The view is considered to be of District importance, relating to the recreational status of the park.	Existing view There are panoramic downhill views southeastwards from this vantage point, over an extensive, generally level plain, with ground rising slightly in the far distance. The view is of a patchwork of pasture fields, with well defined field boundaries marked by hedgerows and trees. Layers of tree cover gradually merge with increasing distance. Occasional farmsteads dot the landscape, Hafod-y-bwch Open Farm forming a foreground feature. Proposed view The proposed line will form a component of the view from south of Hafod-y-bwch Open Farm to approximately the point at which it crosses the B5426, near Black Brook Bridge. It will form a very small component of	Negligible	Minor

View point Ref	Description location	Reason for selection	Distance from optimised proposed route	Sensitivity and Importance of View	Nature of change (description of existing/proposed view)	Magnitude of effect	Significance
					the view, and be entirely backgrounded by land beyond.		
35	View from PROW along Wat's Dyke Scheduled Monument, south of Black Brook Bridge on the B5426, looking SW	Linear Scheduled Monument; PROW crossed by route	70mE	The sensitivity of footpath users is considered high. The path is located along Wat's Dyke, a scheduled monument of national importance, and feature noted in tourist information and marked on OS Maps. The importance of the views from this path are considered to be Regional overall, but of lesser importance individually.	Existing view There are short, level views southwestwards across a pasture field to a horizon formed by field boundary trees and hedgerows. A high voltage power line crosses the westerly view in the middle distance, both tower and conductors being apparent above the horizon. Proposed view The proposed line will cross the view in front of the field boundary trees forming the horizon, and will be openly visible in the foreground from this viewpoint. It is likely that the supports to the west of the public footpath/Wat's Dyke will be visible above the backdrop of woodland; those to the east of the path are likely to be largely backgrounded by field boundary trees.	Medium	Moderate
36	View from PROW along Wat's Dyke Scheduled Monument, near Outfalls Cottage, looking NE	Linear Scheduled Monument; PROW crossed by route	235mW	The sensitivity of footpath users is considered high. The path is located along Wat's Dyke, a scheduled monument of national importance, and feature noted in tourist information and marked on OS Maps. The importance of the views from this path are considered to be Regional overall, but of lesser importance individually.	Existing view The view northeastwards from the footpath is a level, short distance view over pasture fields bounded by gappy hedgerows with numerous hedgerow trees. Two to three fields are visible; beyond this the view is curtailed by layers of field boundary vegetation and buildings at Clwt and Clwt Cottages. Views to the north are curtailed by a continuous line of trees and tall hedgerow along Wat's Dyke. Proposed view The proposed line will cross the view beyond the first field boundary, which comprises an open, remnant hedge with numerous mature trees. This will provide a degree of screening to supports, but it is likely that the conductors will be visible above the wooded horizon. Approximately 500m length of line will be visible, from the point at which it crosses Wat's Dyke to east of Outfalls Cottage.	Medium	Moderate

Conclusions

13.92 The proposed route has been identified to minimise effects on the landscape character and in views. An overhead line inevitably will be visible in the landscape. However the nature of the wood pole support chosen as opposed to a steel tower (pylon) line will significantly limit the scale of effects.

13.93 From the viewpoints assessed, **which represent a selection of the most sensitive visual receptors along the proposed route**, the visual effects of the proposal would be moderate in a third of the viewpoints assessed, and less in the remainder. There would be no major adverse visual effects.

13.94 Of the 13 viewpoints where the visual effects are considered to be of moderate significance, only four are located at distance greater than 250m from the proposed route. This indicates, as would be expected, that greater effects are likely in the immediate vicinity of the proposed overhead line, rather than from more distant viewpoints.

13.95 Figure 13.29: Effects on viewpoint locations, illustrates which viewpoints would experience moderate, and therefore significant effects.

13.96 The distant viewpoints which have moderate visual effects are considered to have high sensitivity and be important at a greater than local scale (compared to other viewpoints at a similar distance from the proposed overhead line) due to either their designated status or value as a tourist facility (Viewpoints 7, 11 and 22 and 23).

13.97 Viewpoint 7, adjacent Park Eyton Lodge on the A539, represents a view from the edge of a detached part of Wynnstay Park registered historic parkland. The proposed route has been aligned to avoid proximity to this sensitive landscape.

13.98 Viewpoint 11, adjacent Forge Farm, Pont-y-Blew, within the Ceiriog valley, comprises the view from within a locally designated Special Landscape Area. In this valley, the proposed route is most visible where it traverses the steep slope of the eastern valley side. Elsewhere, the route is situated at a relatively low level within the landscape, which has a generous amount of mature tree cover, so views of the line within the valley generally are likely to be screened or filtered by trees.

13.99 Viewpoints 22 and 23 are located on the Shropshire Union Canal, a recognised tourist attraction in this region.

13.100 The scale of change (magnitude of effect) within these ‘more distant’ views is not great, but the enhanced sensitivity of the receptor and importance of the view results in effects of moderate significance.

13.101 Within 250m of the proposed overhead line, there are three instances where viewpoints which are public rights of way have been assessed as likely to experience an effect of moderate significance, viewpoints 18, 21 and 24. These viewpoints have panoramic views, and viewers can appreciate a substantial length of the overhead line. In these cases, the scale of change in the view is the key factor in determining significance of effect. It is relevant to note that views from public rights of way can reasonably be assumed to be transient views (one of a series of views experienced by the receptor walking along the footpath), and hence of less significance than fixed viewpoints.

13.102 In the remaining 6 cases where viewpoints are likely to experience an effect of moderate significance, the sensitivity of the receptor and importance of the view, rather than the magnitude of the effect, is considered to be the key factor in determining significance. These 6 viewpoints are either of designated status or views from properties/edge of settlements, or both in some cases.

13.103 Moderate visual effects have been predicted in the following locations:

- From the eastern edge of settlement at Pentre Bychan, where properties on the B5605 have open, downhill views towards the northern termination point of the overhead line and supports further east (Viewpoint 1);
- From the public footpath along Wat's Dyke, near Gyfelia, where this nationally important Scheduled Monument is crossed by the route (Viewpoints 35 and 36);
- From the easternmost edge of Wynnstay Park registered historic parkland (Viewpoint 7);
- From within the Ceiriog valley, a locally designated Special Landscape Area, in the vicinity of Tenement, near Pont-y-Blew (Viewpoints 11, 12 and 13);
- From public footpaths with panoramic views over relatively open landscapes, north of St Martin's village (Viewpoint 18), west of Wigginton (Viewpoint 21) and south of Rhosygadfa (Viewpoint 24)
- From within the relatively open, shallow valley of the Shropshire Union Canal (Viewpoints 22 and 23)
- From the B5009, Gobowen to Whittington road, near Great Fernhill listed building (Viewpoint 29).

13.104 As the selected viewpoints constitute a selection of the most sensitive viewpoints in the vicinity of the proposed overhead line, visual effects experienced by other receptors are likely to be of equal or lesser significance. In addition, the majority of the proposed overhead line would be likely to be visible over a relatively short distance (two to three fields), with visibility curtailed by vegetation. Overall, significant visual effects are limited in number and geographical spread.

14.0 EFFECT ON THE LANDSCAPE

Introduction

14.1 This chapter considers the likely significant effects of the proposed overhead line on landscape character and upon valued landscapes, as identified by designations.

14.2 Overhead lines tend to give rise to effects within the landscape by virtue of a number of attributes specific to both the form of the support structures and to their extended linear nature. These attributes include:

- Vertical form of the wood pole structures, especially termination and angle poles;
- The linear routeing of the lines through the landscape;
- Relationship to the scale and nature of the existing landscape.

Method of assessment

14.3 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.

14.4 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.

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

14.6 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; and
- effects on designated landscapes.

14.7 Initially the assessment within this chapter considers effects upon designated landscapes. This is followed by an assessment of the effects upon the landscape character types through which the proposed overhead line would be routed. The landscape character types are those defined in published assessments (Wrexham CBC and Shropshire CC).

14.8 An evaluation has been 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.

14.9 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.

14.10 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.

14.11 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;
- The condition or quality 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 impacts: a) magnitude of effects

14.12 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 14.1: 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)

Assessment of impacts: b) Significance of landscape effects

14.13 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.

14.14 The significance of landscape effects has been judged according to the criteria outlined below in Table 14.2:

Table 14.2: 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)

Consultations

14.15 In undertaking this assessment consultation has been undertaken with statutory consultees and others to ensure that the assessment is as well informed as possible and that the concerns and interests of the parties that were consulted are taken into

consideration (see Chapter 1: Introduction). The Scoping Report for the EIA (requesting a Scoping Opinion), which was forwarded to a wide range of stakeholders in December 2007, included details of proposed assessment methods. Requests were made by consultees for consideration of social and cultural aspects of landscape character, and for use of historic landscape characterisation information within the environmental assessment.

Baseline environment

14.16 An inventory of designated and valued landscapes, together with a summary description of landscape character types within the study area, are provided in Chapter 7: Study Area Inventory. Figure 7.6 illustrates the location of the different landscape character types; photographs illustrating landscape character are provided in Figure 7.7. Figure 7.8 illustrates landscape designations within the study area.

Landscape character along the proposed route

14.17 The proposed route passes through 8 different landscape character areas, as identified within Wrexham LANDMAP SPG 2007 and Shropshire County Council Landscape Types. These are listed in the order in which they are encountered when moving from north to south along the proposed route. The length of overhead line through each area is also identified, as an aid to assigning relative importance to each character area:

- 7C Rhosllanerchrugog, Rhostyllen, Ruabon, Pen y Cae (1.2km)
- 13A Welsh Maelor (8.1km)
- 12A Dee Ceiriog Wooded Valley (1.5km)
- Riverside meadows (formerly SP/72 Castle Mill) (<100m)
- Wooded river gorge (formerly SP/72 Castle Mill) (0.25km)
- Principal timbered farmlands (formerly SP/43 St Martin's) (4.5km)
- Lowland moors (formerly SP/57 New Marton) (0.5km)
- Principal settled farmlands (formerly OH/10a & b Gobowen and Oswestry)(1.7km)
- Lowland moors (formerly SP/38 Halston Hall) (0.3km)
- Principal settled farmlands (formerly OH10b Gobowen and Oswestry) (2.2km).

14.18 Whilst the information contained within Chapter 7: Study Area Inventory, provides a general overview of character and context, more detailed descriptions from the published landscape assessments are provided in this chapter for the character areas within which the overhead line would be situated.

14.19 In addition, further analysis has been undertaken of Wrexham LANDMAP, as advised by CCW in recent guidance on EIA. Classification and evaluation relating to the four aspects of the landscape which are currently available on the LANDMAP website is presented at Figures 14.1 – 14.4, with supporting information in Appendix 14A. Historical landscape information is not currently available via the website, but information from the Technical Appendix to LANDMAP relating to this aspect has been considered within this assessment.

LANDMAP analysis for Welsh part of study area

Visual and Sensory (Figure 14.1 & Table 14A.1)

14.20 The proposed overhead line would pass through three aspect areas; open rolling lowland between Legacy and Park Eyton, mosaic rolling lowland between Park Eyton and the River Dee valley, and wooded lowland valley in the vicinity of the rivers Dee and Ceiriog.

14.21 Open rolling lowland is further defined as Maelor South of Wrexham (WRXHMVS052), an attractive archetypal rolling farming landscape with elements of estate farming and a pleasant mix of small to medium field patterns and woodland blocks and copses. It is visually similar to the Cheshire and Shropshire Plain, but an uncommon landscape for Wales. It is evaluated as Moderate overall, but scenic quality and integrity are High.

14.22 The mosaic rolling lowland between Park Eyton and the River Dee valley (WRXHMVS049: Pentre, Erbistock, Eyton and Bryn-y-pys) is summarised as an attractive rolling traditional farming landscape, with a higher proportion of mature and established tree stock than the adjacent aspects. The area feels settled, tranquil, and has a strong historic landscape element in terms of its high number of former historic and landed estates. The aspect area is evaluated as High, due to the importance of the aspect on a regional scale. In terms of North Wales, this "English" character is unusual.

14.23 Wooded lowland valley (WRXHMVS034: Dee & Ceiriog River Valleys) is described as attractive and steep sided well wooded river valley complex. Sensory perceptions and qualities include peace, tranquillity, the sound of running water and leaf movement in wind. Although some obvious elements of human intervention are evident (i.e. viaducts) this aspect feels removed from day to day life… The scenic quality of this aspect area is evaluated as **Outstanding**. However, the overall evaluation is High, the justification for this being that public access to the area is limited, reducing the overall evaluation.

Landscape Habitats (Figure 14.2 & Table 14A.2)

14.24 West of the A483(T) the habitats re classified as Mosaic, Talwm Grassland (WRXHMLH0231) with main Phase 1 habitat types being semi-natural broadleaved woodland, improved grassland, arable, buildings and semi-improved neutral grassland. The area is very large, mainly grassland with small to medium sized fields with hedges, and includes Johnstown Newt Sites SAC. It is evaluated as High overall, with **Outstanding** importance for key species, which relates to internationally significant ponds which support a wide range of species including great crested newt.

14.25 East of the A483(T), to the River Dee valley, the habitat is classified as Improved Grassland, Eyton Grassland (WRXHMLH029). Summarised as a patchwork of small both permanent pasture and fields cut for hay and silage, bounded by hedges with scattered trees, together with a number of small woods, many ponds and two areas of parkland. This area has an overall High evaluation, with **Outstanding** importance for key species, relating to the presence/extent of small, hedge-bound fields and high density of ponds, which support a wide range of species.

14.26 The Dee valley and its tributaries are classified as Mosaic, with aspect areas Halton Wood (WRXHMLH025) and Moor Woodland (WRXHMLH058) being crossed by the proposed overhead line.

14.27 Halton Wood is a large area of woodland in the steeply sloping and narrow valley of the River Dee. Woodland has remnants of original oak woodland, much of which is designated SSSI. It is evaluated as High as an important woodland network with some significant oak and ash woodlands.

14.28 Moor Woodland is an area of planted and semi-natural woodland which forms a biodiversity corridor along the small river valley. It is evaluated as Moderate, as a locally significant woodland network.

Geological Landscapes (Figure 14.3 & Table 14A.3)

14.29 From Legacy to Wynnstay Park area – geological landscape is classified at level 3 as lowland glacial outwash plain/field (WRXHMGL086). The geology /geomorphology is considered to be typical and widespread, with an overall moderate evaluation.

14.30 The area around Wynnstay Park and south to the River Dee is glacio-depositional topography with a thin veneer of glacial clays. (level 4 classification of WRXHMGL096). This area has a high overall evaluation, relating primarily to rarity of a site of regional importance for Carboniferous stratigraphy (RIGS).

14.31 The River Dee valley is classified as incised river/stream valley/ravine and has an overall high evaluation relating to river cliff features of possible regional significance and inclusion of a RIGS of regional importance for Carboniferous stratigraphy. (WRXHMGL018 & 019).

Cultural Landscapes (Figure14.4 & Table 14A.4)

14.32 The vast majority of the cultural landscape through which the proposed overhead line would be routed is classified as Rural, subdivided in Mynydd Rhiwabon Esclusham (lower slopes) west of the A483(T) and Maelor Gymraeg South east of this main transport link. Maelor Gymraeg South (WRXHMCL034) is a very extensive area; 90% of the proposed route through Wales is within this aspect area. It is summarised as an area historically dominated by estates such as Wynnstay, valued as High as an historic landscape 'and for the way it articulates the role of the great estates…' Vulnerability to change is evaluated as high.

Published character area descriptions

14.33 The published landscape assessment text is reproduced here. The landscape character assessment has been validated and refined where appropriate by site visits.

Wrexham Landscape Character Area: Rhosllannerchrugog – Rhostyllen, Ruabon – Penycae

Landscape context:

14.34 Rhosllannerchrugog – Rhostyllen is one of four character areas in Wrexham which have a mixed rural and urban landscape.

Visual character:

- Lower slopes of Ruabon Mountain consisting of undulating farmland, with residential and industrial development;
- Bersham colliery and tip, and the former Hafod tip, now restored, are landmarks.

Geological character:

- Gentle Carboniferous Coal Measure slopes (sandstone) mostly overlain by glacial till, although Rhosllannerchrugog centre is built on an outcrop;
- A sandstone ridge, highest at Gardden Hill and followed to the north by Offa's Dyke (part now under Johnstown) runs through the centre of the character area;
- To the east of Johnstown, Etruria Marl has been quarried to make the characteristic red bricks and tiles.

Ecological character:

- Most farmland is improved grassland of low biodiversity value;
- Some former industrial sites are now of high wildlife value, including Stryt Las (great crested newts), the former Hafod tip (a young broadleaved woodland), and birch woodland north of Rhos;
- Fragmented areas of semi-natural vegetation include broadleaved scrub, neutral grassland, upland oak woodland along the Afon Eitha valley, beech woodland on Gardden Hill, neutral grassland at Legacy substation, lowland pasture, and oak/ash/sycamore woodlands around the Crematorium and Llwyneinion.

Historical character:

- Settlements are mainly of 19th – 20th century origin but Penycae and Ruabon have older centres;
- Coal mining remains are frequent but Bersham Colliery, with its coal spoil tip and remaining headgear is of particularly high value. Industrial sites are linked by a network of disused industrial railways;
- Border area – prehistoric military hill fort at Gardden and Offa's Dyke, marking a former political and military boundary.

Cultural character:

- Rhostyllen, with modern industrial and commercial areas next to the A483, is now closely linked to Wrexham town;
- Johnstown, once linked with the brickworks and Hafod colliery, is a mainly English-speaking community;
- Rhosllannerchrugog is a culturally rich community with strong Welsh culture and language;
- Surrounding farming is under pressure, with part time holdings and increase in 'horsiculture';
- Hafod y Bonc Country Park is a former tip now important for environmental education and recreation.

Overall management strategy:

Enhancement, conservation and sustainable development.

Wrexham Landscape Character Area: Welsh Maelor

Landscape context:

14.35 This lowland rural area is similar to the English Maelor and Dee Terraces, and to the Cheshire and North Shropshire Plain beyond the Wrexham boundary. However it is geographically and historically separated from the English Maelor by the River Dee, and former administrative boundaries, and is currently more affected by proximity to urban areas.

Visual character:

- Good views to the hills and over the Dee Valley from higher ground;
- Undulating estate farmland with mosaic of farmland and trees (N. and S. areas) and undulating open farmland in the central area;
- Designed parks and gardens;
- Generally an abundance of well managed hedgerows and hedgerow trees;

- Traditional red brick farmsteadings but many barns now converted to residential uses;
- Tranquility and landscape quality affected by A483 and pylons to west.

Geological character:

- Deep deposits of glacial drift overlie bedrock of Carboniferous and Triassic age;
- Glacial till (boulder clay) covers a large part of the character area, with glacial sands and gravels found mainly in the area immediately to the south of Wrexham town, and in the river terrace on which Eyton Grange is situated;
- The area drains to the Clywedog in the north and to the River Dee in the east and south.

Ecological character:

- The River Clywedog valley south of Wrexham town has a diverse range of valuable semi-natural habitats including wet woodlands, lowland meadows and nationally important wetlands (especially for invertebrates) with areas of fen sedge, herb-rich swamp and rush pasture;
- Farm orchards are now rare, but a valuable old orchard survives at Erddig;
- Semi-natural upland mixed ash woodlands, other broadleaved woodlands and plantations are characteristic of the northern and southern areas, forming a mosaic of woodland and farmland. Mixed plantations are also found in the south;
- Although most grassland is improved, remnants of high value neutral grassland survive in the central and northern areas;
- The Welsh Maelor has valuable remnants of estate parkland or wood pasture with mature and veteran trees – a Biodiversity Priority Habitat;
- Field ponds are frequent, and valuable for wildlife.

Historical character:

- Medieval military feature – Wat's Dyke earthern bank and ditch cuts across farmland;
- Widespread evidence of medieval open fields – ridge and furrow remnants of the Wrexham Lowlands;
- Important designed parklands on Cadw Register at Erddig, Wynnstay and Brynkinalt, as well as Penylan, Erbistock and Rosehill;
- Non-planned settlement with medieval origins at Gyfelia and Crabtree Green;
- 19th/20th century ribbon development at Marchwiel;
- Disused Ellesmere railway;
- Remnants of former ordnance depot at Parkey area south of Wrexham Industrial Estate.

Cultural character:

- Still predominantly agricultural, with dispersed farms;
- Farmsteads and villages affected by commuter pressure with residential conversions and new housing;
- Sense of place – Erddig and Wynnstay in particular;
- Wynnstay Estate once culturally dominated the southern part of the Welsh Maelor but the buildings of the core area are being converted to residential accommodation, enabling restoration of the Grade 1 Capability Brown pleasure gardens;
- High level of recreational use in Erddig and Clywedog Valley, and extensive network of small lanes and rights of way in all parts except Wynnstay.

Overall management strategy:

Conservation and sustainable rural development.

Wrexham Landscape Character Area: Dee/Ceiriog Wooded Valley

Landscape context:

14.36 The largest of a number of small enclosed wooded valleys within the rural Eastern Lowlands of Wrexham.

Visual character:

- Enclosed valley with mixed woodlands and pasture, incised into the Welsh Maelor estate landscape;
- Character constrasts strongly with adjoining areas;
- Former clay pit, now intrusive landfill site, at Pen y Bont, is being restored to original contours;
- Visually outstanding Chirk aqueduct and rail viaduct are together a signficant tourist attraction.

Geological character:

- River cliffs of red sandstone where Dee and lower Ceiriog have cut down through overlying glacial till into bedrock are of interest – the stone has been used locally as a building material.

Ecological character:

- River Dee is an outstanding aquatic habitat (designated as SSSI) with associated wet woodland;
- Extensive woodland habitats of high and moderate value including upland oak woodland, mixed and broadleaf plantation woodlands;
- Some improved grassland and farmland.

Historical and cultural character:

- Partly within Wynnstay, Penylan and Erbistock Estates, all on Cadw Register of Historic Parks and Gardens;
- River crossings are important for north-south communications and transport.

Overall management strategy:

*C*onservation.

Shropshire Landscape Type: Riverside Meadows

14.37 These are linear landscapes associated with the well defined floodplains that border the major rivers in the county, the Severn, Vyrnwy, Tern and Teme, and their larger tributaries. The river channels are flanked by extensive areas of waterside meadows defined by hedge and ditch boundaries, which are used for seasonal grazing within a predominantly pastoral farming system. These meadows are often associated with wetland habitats such as floodplain grazing marsh, which support species such as Meadowsweet, Creeping Buttercup and Silverweed and grasses like Perennial Rye-grass and Meadow Foxtail.

14.38 Tree cover comprises linear patten of trees – predominantly alders and willows – along watercourses, together with scattered hedgerow and field trees. Woodlands, if present at all, tend to be wet, alder dominated woods, together with estate game coverts and regular poplar plantations.

14.39 Because of the frequency of flooding, the Riverside Meadows remain largely unsettled, with the exception of occasional mill buildings and small settlement clusters around bridging points.

14.40 Woodland cover was probably removed from many of the floodplains in the county during later prehistory. By the early medieval period many of these areas were used as common rough pasture and grazing marsh, and the amount of enclosed meadowland remained small until the 14th century.

14.41 Towards the end of the medieval period documentary sources indicate that there was a significant increase in enclosed meadowland, enabling specialised livestock farming that was not possible in the common open fields. Although highly valuable, meadowland was sometimes broken up during the later Middle Ages and brought into temporary cultivation. The use of riverside meadowland for fattening beef cattle became increasingly important during the later 16th century, and by the mid 17th century water meadows were becoming widespread in the county. These enabled water to be run over the land during the winter, via a system of dams and sluices that diverted water away from the main river channel. As a result, nutrient rich silts were deposited, which protected the pastures from frosts and encouraged a rich, early flush of grass in the spring. However, because of the expense involved, the impetus behind their construction often came from the larger landowners. Water meadows remained in use into the 19th century, and were particularly extensive in the Tern valley.

14.42 In the later 20th century advances in drainage technologies and flood management techniques made cultivation of the floodplain more viable where more favourable soils exist. Consequently arable farming now extends up to the river banks along parts of the Severn to the east of Shrewsbury, and along much of the Tern valley.

Shropshire Landscape Type: Wooded River Gorge

14.43 Principally located along sides of the Ceiriog/Dee valley, on the Welsh border, and the Severn valley, between Ironbridge and Highley, these are steeply sloping, heavily wooded, linear landscapes. The woodlands are primarily ancient and of significant ecological interest, because of their humid, overgrown character, although many have been heavily replanted with conifers.

14.44 Deeply eroded by glacial meltwaters, the steep valley sides have localised rocky outcrops, some of which have been accentuated by quarrying and mining activity, especially along the Ironbridge gorge. As with Principal Wooded Hills, the steepness of the slopes has inhibited clearance for agriculture in the past. Where fields do occur, however, they are mainly associated with pastoral production, with some mixed farming in places.

14.45 Overall these landscapes remain sparsely settled with a highly dispersed settlement pattern of farmsteads and wayside cottages. The Ironbridge gorge forms a noticeable exception, with a densely clustered settlement pattern.

14.46 Historically, these landscapes have been managed for the timber resources they provide. Where fields exist within this type their form is usually suggestive of assarting (woodland clearance).

14.47 Within the Ironbridge Gorge the readily accessible mineral resources, managed woodland cover and the presence of the River Severn facilitated the development of coal and iron industries from the medieval period onwards. These industries reached their peak between the 17th and the 19th centuries, during which period the settlements within the Ironbridge Gorge expanded rapidly.

14.48 Around Quatt, to the south of Bridgnorth, parts of these landscapes were also incorporated into the parkland around Dudmaston Hall, which gives the woodland in this area an estateland quality.

Shropshire Landscape Type: Principal Timbered Farmlands

14.49 This landscape type occurs throughout much of Shropshire, with notable concentrations along the northern boundary with Cheshire, and to the south of Shrewsbury. They are predominantly rolling lowland landscapes, with occasional steeply undulating valley sides, and are characterised by a mosaic of agricultural land.

14.50 Tree cover, in the form of dense stands of streamside trees, scattered hedgerow trees, and small to medium sized woodlands play an important role in structuring these landscapes, creating a small to medium scale and filtered views. Much of the woodland has an ancient character, although some woods have been replanted with conifers. Oak and ash represent the main hedgerow tree species, whilst alder and willow dominate along watercourses.

14.51 The settlement pattern typically comprises of a medium to high density dispersal of farms and wayside cottages, with occasional hamlets and small villages.

14.52 Like the Wooded Farmlands, much of the agricultural land within this type was gradually enclosed from extensive tracts of woodland and 'waste' (common rough pasture) during the medieval and early modern periods. This has produced an intricate countryside, characterised by a network of winding lanes, scattered farmsteads, and small irregular fields. Examples include the areas around Buttonbridge, on the edge of the Wyre Forest, and Coptinviney, to the north-west of Ellesmere.

14.53 Localised open fields existed around the larger settlement foci, the piecemeal enclosure of which had generally been completed by the 17th century.

14.54 In some places, for example around Exfords Green and Longden Common, to the south of Shrewsbury, and Ebrewood to the north-east of the town, sizable areas of common wood pasture and rough grazing land survived into the early modern period. Encroachment by smallholders around the edges of these areas, between the 16th and 19th century, account for the small concentrations of wayside cottages that occur in some places. Enclosure of the remaining area of common land was completed in the 18th and 19th centuries, creating a regular pattern of rectilinear fields and straight roads.

14.55 During the later 19th and 20th century, conifer plantations where established in some locations, occasionally on the site of older woodlands. Where more favourable soils exist, the introduction of intensive arable farming in the later 20th century has resulted in field enlargement, creating more open conditions and a larger scale landscape.

Shropshire Landscape Type: Lowland Moors

14.56 Lowland Moors occur throughout northern and north-eastern Shropshire; most extensively along the sourthern edge of Whixall Moss, around Baggy Moor, to the north of Ruyton-XI-Towns, and the Weald Moors to the north of Telford. They are flat, low lying, wetland landscapes, which occupy shallow hollows in glacial drift deposits.

14.57 Tree cover consists of scattered willows along the drains and other water channels, which also represent one of the defining characteristics of this landscape type, together with regular estate plantations.

14.58 Patches of wet rough pasture survive where current land use is less intensive, and in some places, such as Fenemere near Baschurch and Crose Mere north of Cockshutt, small natural meres provide further ecological diversity. Elsewhere relic patches of wetland vegetation can be found along road verges.

14.59 The historical wetness of the soils means that these landscapes remain largely devoid of settlements, whilst the few roads within them were created as part of the drainage schemes.

14.60 A small number of wayside cottages are, however, present in some places, most notably around the edge of Whixall Moss. Together with the medium-large scale and open views, this lends these landscapes a secluded quality.

14.61 After the end of the last Ice Age the depressions which the Lowland Moors occupy began to gradually silt up, eventually resulting in the formation of thick beds of fen peat. Recent research on Baggy Moor, suggests that these peats were covered by wet woodland during later prehistoric and Roman periods. This woodland cover appears to have been cleared during the early medieval period, creating more open conditions.

14.62 By the later Middle Ages these landscapes provided extensive commons, which provided an important variety of resources, including peat (for fuel), fish, particularly eels, wildfowl and seasonal rough pasture. In some locations, smallholders established cottages around the edges of these commons between the 16th and 18th centuries.

14.63 Improvement of the Lowland Moors was undertaken by the larger landowners from 16th century onwards, culminating in the large, capital intensive drainage schemes of the late 18th and 19th centuries. The improved pastures that were established as a result enabled some of these wetlands, particularly the Weald Moors, to be used as fattening grounds for cattle and sheep. However, their enclosure often proved contentious, particularly when it involved a curtailment of common rights. Disputes also arose over responsibilities for the maintenance of drains. The consequent neglect sometimes resulted in flooding and the gradual reversion to wetland.

14.64 Ongoing drainage works in the later 20th century has permitted intensive arable cultivation in some locations, particularly on Baggy Moor and the Weald Moors.

Shropshire Landscape Type: Principal Settled Farmlands

14.65 Principal Settled Farmlands are prevalent throughout northern Shropshire, mainly in association with Permian and Triasssic sandstones, together with the Rea Valley, the Vale of Montgomery, the northern end of Ape Dale and the areas to the south of both Ludlow and Bridgnorth. These are settled lowland landscapes of small villages and hamlets, scattered farms and relict commons, with varied soil conditions that are predominantly used for mixed farming.

14.66 Around Ellesmere, this patchwork is further enriched by a series of natural lakes and mosses, which occupy kettle holes within the rolling glacial tills that cover this part of the county.

14.67 Like the Settled Pastoral Farmlands, this landscape type lacks significant woodlands, although small pieces of ancient woodland and plantation occur in some areas.

Characteristically, however, tree cover comprises scattered hedgerow and field trees (mainly oak and ash), amenity trees around settlements and denser linear stands of alder and willow along watercourses.

14.68 The Principal Settled Farmlands are also defined by a clustered settlement pattern of hamlets and smaller villages and a medium to high density dispersal of farmsteads and wayside cottages.

14.69 Together with the relatively small, sub-regular fields, these elements combine to create medium scale landscapes with predominantly filtered views.

14.70 The Principal Settled Farmlands also have a varied history of development. During the Middle Ages many of the villages and hamlets were surrounded by open fields, the enclosure of which occurred on an informal basis during the later medieval and early modern period. Beyond these areas the field patterns often become more irregular and appear to have been enclosed directly from woodland or rough pasture. In some places in north Shropshire relict commons can also be identified, distinguishable by the associated clusters of wayside cottages and smallholdings. Such encroachments were established between the 16th century and beginning of the 19th century. Examples include Barkers Green to the south of Wem, and Hengoed, north of Oswestry.

14.71 In some places the growth of these settlements was linked to the development of rural industries, most notably coal mining in the Rea valley and the area around St Martin's, north of Oswestry.

14.72 The 18th and 19th century saw the rationalisation of pre-existing field systems in some areas, such as the Vale of Montgomery, as improving farmers adopted new husbandry practices. In the Terne valley to the south of Ludlow, orchards also become a particular feature, although many are no longer actively managed. A general intensification of farming practices occurred in the later 20th century, resulting in the amalgamation of fields in some areas.

Historic, social and cultural aspects of landscape character in the vicinity of the proposed route

Wrexham

14.73 Information on the historic and cultural landscape character of the Wrexham area is detailed in LANDMAP Technical Appendices. The History and Archaeology Aspect technical overview includes information regarding the lowland, rural parts of the borough through which the overhead line is routed. The following extract is relevant to the parts of the route in Wrexham:

> "*Most of the visible landscape owes its form to agricultural exploitation from the prehistoric to the present. Enclosed land with irregular field patterns, and small fields with mixed species hedge boundaries, are a frequent feature of the borderland and the Ceiriog valley. This distinctive landscape may reflect the earliest medieval enclosure, little altered and therefore of high historical landscape value. Evidence of a different type of medieval agriculture survives in both the ridge and furrow and fossilised strip fields of the Maelor. This form is rare in Wales and is under threat by modern farming techniques in England and should be rated as of high value."*

14.74 Relevant extracts from the Cultural Aspect technical overview include the sections on agriculture, settlement pattern, and on the designed park landscapes, as follows:

> *"Agriculture in the WCBC area exemplifies the diversity of an area with different geology and topography as well as two very different agricultural traditions. To the west a recognisably Welsh pattern of hill-farming predominates, though there is evidence of considerable agricultural diversification in for instance the Ceiriog valley. The central part of the area, effectively corresponding to the Maelor Gymraeg and the western part of the Maelor Saesneg, forms part of a predominantly pastoral economy, whereas the eastern part of the Maelor Saesneg has been for some time dominated by an arable economy. Generally, it seems clear that traditional farming practices in the central and eastern parts of WCBC at least are undergoing fundamental change, that farms are uniting and that contractors are taking the place of the traditional tenant farmer. This has led to a considerable number of farm-houses and farm buildings becoming vacant, and either falling into ruin or being adapted for other purposes, often as dormitory homes for families who work elsewhere. It also appears that the sale and breeding of horses and the operation of livery stables for leisure purposes is now a big business in the area, though precise statistics are lacking."*
>
> *"The pattern of dispersed settlement within WCBC reflects the evolution of agricultural practice, both in the Shropshire-Cheshire economy of the Maelor Gymraeg and the Maelor Saesneg and the hill-farming economy of the western parts. The very substantial estate-sponsored farm buildings of the eastern part of WCBC are significant items of the cultural and historic landscapes."*
>
> *"Whilst all these (parks and designed landscapes within Wrexham) form significant cultural landscapes within WCBC, the great sweep of the parkland at the western extremity of the plain and the lower foothills is particularly striking, and includes Erddig, Wynnstay, Chirk and Brynkinallt. Wynnstay, once the centre of greatest estate in North-east Wales, forms the focus of a gentry landscape of classical gate lodges and estate-sponsored farms, though its glory is greatly diminished. Many of the buildings on its periphery are in poor condition, and the park itself has been cut in two by the A483."*

Shropshire

14.75 Information about the historical development of the landscape, from an Historic Landscape Character Assessment undertaken by Shropshire County Council, has been integrated into the Shropshire Landscape Typology. The proposed overhead line would cross landscapes with the following historic landscape character types:

- Planned enclosure
- Piecemeal enclosure (from medieval open fields)
- Re-organised piecemeal enclosure
- Drained wetland
- Small, irregular fields (that cannot be assigned to a HLC type)

14.76 These are defined as follows:

Planned enclosure

14.77 These areas are characterised by either small or large fields that share very straight boundaries, giving them a geometric, planned appearance. Laid out by surveyors, these field patterns result from late enclosure during the 18th and 19th centuries. This historic landscape character type, therefore, includes commons that were enclosed by Act of Parliament. Although this process was relatively insignificant in Shropshire when compared with other counties, it still resulted in the enclosure of approximately 25,800 ha (or 7.5% of the county).

Piecemeal enclosure

14.78 Piecemeal enclosure can be defined as those fields created out of the medieval open fields by means of informal, verbal agreements between farmers who wished to consolidate their holdings. Within Shropshire this process appears to have been well underway by the late medieval period, and a number of 16th century commentators regarded the county as largely enclosed. These areas have field patterns comprised of small irregular or rectilinear fields. At least two boundaries will have 's-curve' or 'dog-leg' morphology, suggesting that they follow the boundaries of former medieval field strips.

Re-organised piecemeal enclosure

14.79 Areas of either small irregular or rectilinear fields that have lost 10 or more field boundaries since the 1st edition 6" map, OR areas of large irregular or rectilinear fields. In both cases there will be at least two field boundaries that exhibit 's-curve' or 'dog-leg' morphology. The field patterns in these areas result from the amalgamation of fields created through piecemeal enclosure. In most cases it can be demonstrated that this has occurred since the publication of the 1st edition 6" OS map.

Drained wetlands

14.80 The field patterns in these areas can be small or large, irregular or rectilinear. However, most of their boundaries will be defined by the course of drainage ditches, and some field boundaries may also follow watercourses. The drainage of wetlands was underway in Shropshire by the 16th century, after which some of these more extensive areas (e.g. the Weald Moors) began to specialise in livestock fattening. Some drained wetlands (e.g. Baggy Moor) were brought into cultivation during the later 18th century and drainage operations and improvements continued into the 19th and 20th century.

Small, irregular fields

14.81 Areas of small irregular fields that cannot be assigned to one of the other historic landscape character types. Includes small meadows and closes that do not occur next to settlement boundaries.

Landscape sensitivity

14.82 The landscape's *overall* sensitivity to any change has been considered within both Shropshire's draft landscape character assessment (2003), and in Wrexham Landscape Character Area Guidance, adopted as SPG in March 2007. The landscape character types and their sensitivities are listed in the Table 14.3 below.

14.83 Note that the Shropshire landscape character type names are those used in the draft character assessment, as there is no assessment of sensitivity within the published Shropshire Landscape Typology (2006).

14.84 This 'overall sensitivity' is not an assessment of the likelihood of a landscape's character being altered by the introduction of a specific development (in this case, a wood pole mounted overhead line), but a general indication of sensitivity. This information is included as it gives an indication of public perception of overall sensitivity (as recorded in adopted landscape character assessments), and in the case of Wrexham LANDMAP SPG gives some indication as to the types of development that would be most detrimental.

14.85 Overall sensitivity was taken into consideration in assessing the specific sensitivity of landscape character types along the route to overhead line development of this nature. Specific sensitivity considered the degree to which a landscape could accommodate a wood pole overhead line without detrimental effects upon its character, as outlined in paragraph 14.11.

Table 14.3: Landscape Sensitivity

Landscape character type	**Overall sensitivity *(from Wrexham LANDMAP SPG 2007 and Shropshire draft Landscape Assessment 2003)***
7C RHOSLLANERCH RUGOG/RHOSTY LLEN	The distinctive Welsh identity of the area is vulnerable to development pressure, particularly infill housing of standardised design and materials. The A483 corridor is visually threatened by nearby landfill, masts, building development and power lines. Surrounding farmland is also very vulnerable to urban pressures.
13A WELSH MAELOR	The traditional Welsh Maelor landscape is very vulnerable to continuing development and recreational pressures, to economic changes which threaten traditional farming, and from land use practices and development which do not take historical landscape features into account.
12A DEE/CEIRIOG WOODED VALLEY	This landscape character area is narrow and linear and sensitive to inappropriate development on its margins. Widening of road crossings would also have a detrimental impact. The future of the area depends on the long-term management of the adjoining estates.
SP/72 CASTLE MILL	Moderate
SP/43 ST MARTIN'S	Moderate
SP/57 NEW MARTON	Moderate
OH/10a&b GOBOWEN AND OSWESTRY	Moderate
SP/38 HALSTON HALL	High

Landscape designations

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

14.87 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.

14.88 The proposed route passes through the following areas designated, either entirely or in part, for their landscape value:

- Wrexham CBC Special Landscape Area (Length of 3.8km as overhead line and 1.7km as underground cable)

- Oswestry BC Area of Special Landscape Character (Length of 1.0km as overhead line).

14.89 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.

14.90 The route passes in the vicinity of (within 1km of boundary of) four Registered Historic Parks and Gardens:

- Erddig
- Wynnstay
- Pen-y-lan
- Brynkinalt.

14.91 Further details of the above landscape designations are found in Chapter 7: Study Area Inventory.

Change within the landscape

14.92 In considering effects upon landscape character, an assessment needs to be made as to how the landscape is likely to change, irrespective of the proposed development. The Wrexham LANDMAP technical appendices contain information regarding the changes occurring within the Wrexham area, which are summarised below.

14.93 The majority of the northern part of the study area comprises a settlement pattern of scattered farmsteads in a rural lowland landscape. The past influence of wealthy landowners is shown by the number of historic estates, parks and gardens (Wynnstay, Erddig, Brynkinalt). Predominantly pastoral farming is changing to a mix including arable, horse-breeding and livery. Changes in farming practices are accompanied by changes in the use of buildings, with conversion of farm buildings to residential use; both of these changes are affecting rural character, but much evidence remains of earlier landscape features, such as field systems.

14.94 At the interface between lowland and upland, the borderlands have a mixed landscape character. The settlement pattern of large villages (Rhos, Ruabon) originated due to mining and quarrying in the area. This transition landscape includes a communications corridor, with linear features such as the A483(T) following the grain of the landscape in a N-S orientation. These borderlands are a changing landscape, with the introduction of new housing and restoration of former spoil tips.

14.95 Changes within the relatively stable rural landscape of Shropshire through which the proposed overhead line would be routed are likely to be similar to those being experienced in the rural lowlands of Wrexham, such as changes in farming practices and the conversion of farm buildings to residential use. St Martin's village is expanding through piecemeal residential development at its fringes.

Potential effects

14.96 The route identification and assessment process forms part of the route mitigation process. This process seeks to design an overhead line route that as far as practicable limits and avoids significant adverse effects on the landscape.

14.97 The main landscape effect of the proposed overhead line during its operational life would be the presence of modern, man-made structures within the countryside. Landscapes of different character vary in their ability to absorb this type of linear development. Sensitive landscapes are defined as those which are least able to absorb such development.

14.98 Landscape sensitive to this type of development would, for example, include those with regular or intricate landscape patterns that would be easily disrupted by the presence of overhead power lines. Irregular landscape patterns are generally less affected. Landscapes that have remained unchanged over long periods of time, with little evidence of man-made development, are also generally sensitive to overhead power lines. Variations in scale, form, colour and texture act to influence the ability of the landscape to provide a background or screening opportunities for the proposed development.

14.99 The potential effects of the proposed overhead line would occur during construction and operational life. Construction effects can include tree and hedgerow removal to allow access to and along the overhead line corridor, affecting landscape pattern. Removal of trees along the corridor is likely to be a permanent effect, whereas hedges removed for access can be reinstated within a relatively short time-frame. Creation of new access tracks can have an effect upon local landscape character, though this effect will be temporary as tracks would be reinstated upon completion of construction.

14.100 Once constructed and operational the overhead line would require only occasional visits for maintenance and repair. Excavation required for the repair or maintenance of underground cables may have a greater direct effect on the landscape than maintenance of overhead components.

14.101 In the case of this overhead line development, the effects will in general be considered permanent but reversible. Unless otherwise stated, all effects on landscape character are considered to be adverse, with the introduction of an overhead line providing a contrast to the previously existing characteristics (or a reinforcement of these where existing lines are present).

Impact prediction

14.102 In addition to the introduction of new, permanent features within the landscape, the proposed development will result in changes to the landscape character as a result of tree (and hedgerow) removal and tree surgery to ensure safety clearances for the overhead line. A detailed assessment of the effect upon trees and woodlands has been undertaken, and is reported separately in Chapter 18: Trees and Woodlands. This information has been used to gain an understanding of the likely scale of this effect during construction upon each landscape character type, and upon areas of locally designated landscapes.

14.103 For each effect upon landscape character described below, it is important to note that the effect is described only for that part of the landscape character type affected within the likely zone of visual influence of the proposed overhead line. As has been described in Chapter 13: Visual Effects, this generally constitutes only a very small proportion of the area of each character type. These are therefore the effects local to the route corridor.

14.104 In the conclusions section below, consideration of the overall effect upon the wider landscape character is assessed/evaluated.

Effects on designated landscapes

Special Landscape Areas (Wrexham CBC designation)

14.105 Figure11.1 illustrates the Proposed Route and environmental constraints, including designated landscapes.

14.106 The route would pass through one SLA – the upper slopes of Ruabon Mountain – using underground cables within the road. This will not have an effect upon the landscape character.

14.107 Between the A539 at Park Eyton and the River Dee and Ceiriog valleys, the route would pass through an area which is, for the most part, designated SLA. In the northern part of this area, the landscape is undulating and medium to large scale, with large woodland blocks curtailing and enclosing views. Fields are large scale, bounded by trimmed hedges with occasional mature trees. The route alignment avoids woodland groups, but cuts across the grain of the landscape to avoid the Essential Setting of Wynnstay Park.

14.108 The proposed alignment through this area would have a medium scale (or magnitude) of effect in the northern part of the area, upon a landscape character of moderate sensitivity, with an adverse effect of **moderate** significance.

14.109 In the southern part of this designated area, the landscape character is that of incised wooded valleys, enclosed sloping pastures of small to medium scale and narrow winding lanes, with a defined north-south grain to the landscape. The valleys have a remote, secluded and tranquil atmosphere. The valleys are identified in Wrexham LANDMAP (2004) as being of visual quality 'verging on outstanding' (see Figure 7.8 Landscape Designations) The two existing high voltage power lines through this area are supported on steel lattice towers, and form discordant elements due to their height and positioning on the upper parts of slopes.

14.110 This landscape character area is intact and of high quality. With the exception of the wooded river banks it has, however, a low sensitivity to a wood pole overhead line, as the landform and woodland cover give a high potential for assimilation and screening. The wooded river banks are considered highly sensitive to overhead line routeing, as the potential effect of large scale tree felling would significantly affect this landscape character.

14.111 The proposed route follows the north south grain of the landform, and edges of wooded valleys, and exploits gaps in the woodland to cross the River Dee. As the route would not affect the wooded river banks, it would have a low scale of effect upon a landscape character of low sensitivity *(to this type of development)*, with an adverse effect of **minor** significance.

Area of Special Landscape Character (Oswestry BC designation)

14.112 Within Oswestry, the eastern side of the Ceiriog valley is protected through this designation. In this vicinity, the landscape is characterised by a well-wooded, enclosed valley with steep sides, with medium to large pasture fields on the slopes above. Fields are bounded by clipped hedges with only occasional hedgerow trees, resulting in a more open landscape. This landscape character is moderately sensitive to routeing of a wood pole line.

14.113 The proposed route crosses the Ceiriog valley directly (at right angles) and takes a direct line in a NW-SE direction across the eastern valley side. This minimises the effect on woodland on the valley sides, but is not entirely sympathetic to the field pattern and topography of the slopes above the woodland (cutting diagonally across fields and the hillside).

14.114 The proposed route would have a medium scale of effect upon a landscape of moderate sensitivity, with an adverse effect of **moderate** significance.

Registered Historic Parks and Gardens

14.115 The proposed route does not directly impinge upon any Registered Parklands or their essential settings, and will not affect their landscape character. Potential effects upon the settings of such resources are considered within the chapters on visual effects and effects on archaeology/cultural heritage.

Effects on landscape character types

7C Rhosllannerchrugog – Rhostyllen, Ruabon – Penycae
Description of area local to route corridor (Pentre Bychan to A483(T)

14.116 The proposed route crosses this area from the northern extent of overhead line at Pentre Bychan to the A483(T) road corridor next to the prominent landmark feature of the former Hafod tip. This area is generally flat, with large, irregular-shaped fields divided by trimmed/gappy thorn hedges. There are few hedgerow trees. The character is influenced by several power lines, mostly running in a north-east to south-west alignment, and by the visual dominance of the elevated, artificial landscapes of former colliery tips. The A483(T) road corridor, flanked by young, linear woodland, provides a definite boundary to the area. Adjacent rising land forms a backdrop and horizon to views westwards from the road. As identified in the overall sensitivity of this character area, this is a landscape currently subject to urban pressures, and experiencing change.

Sensitivity to overhead line

14.117 This landscape character has a moderate to low sensitivity to the type of overhead line proposed. The specific sensitivity is lower than might be inferred from the overall sensitivity of the general character type described in Table 14.3, which refers to the area being 'visually threatened' by power lines, for the following reasons. Tree cover is sparse and in blocks (such as the former Hafod tip), which could be avoided. Whilst relatively flat land, combined with little tree cover, would enable views of several supports along the line, increasing the prominence of the line as an element within the landscape, the juxtaposition of this area of flat land with rising land to the west would provide some measure of backgrounding to views of the line. Sensitivity is reduced because power lines are a characteristic, rather than new, feature within the landscape of this area. The existing landscape pattern is not coherent, and so would not be disrupted by an additional overhead line.

Impact prediction

14.118 The proposed route takes an alignment which is similar to that of existing power lines crossing the area. It avoids the woodland of the former Hafod tip. The effect upon landscape character is judged to be permanent, negative and of negligible magnitude. Considered with the moderate to low sensitivity of this landscape, there is a predicted adverse effect of **minor** significance.

13A Welsh Maelor
Description of area local to route corridor (A483(T) to Dee valley)

14.119 The proposed route crosses the northern part of the Welsh Maelor landscape in a predominantly north-west to south-east alignment. The area is gently undulating pasture land, with predominantly medium sized fields, bounded by well-maintained hedgerows with numerous hedgerow trees. Small ponds are a characteristic feature. There are scattered farmsteads and few small hamlets. Views tend to be short, curtailed by tree cover. The historic linear feature of Wat's Dyke crosses the area in a generally north-east to south-west alignment.

14.120 Towards the centre of the character area, around Park Eyton, the landscape is more open, elevated and has larger field sizes. Tall hedgerows and hedgerow trees still form a characteristic feature, but are less plentiful than in the area to the north. Blocks of plantation woodland, often associated with estates such as Wynnstay, form a larger component of the landscape.

14.121 South of the Wynnstay Park estate, landform becomes a defining feature of the character, as the landscape becomes a series of gentle ridges and steep-sided wooded valleys, with a generally north-south alignment, leading to the River Dee. Fields are small to medium in size, laid to pasture and bounded by hedges and numerous hedgerow trees. This enclosed landscape accommodates two existing high voltage power lines, running north-south, supported on steel lattice towers.

14.122 Throughout the Welsh Maelor area the landscape pattern is largely coherent and intact, and appears subject to little change.

Sensitivity to overhead line

14.123 The overall sensitivity of the Welsh Maelor is described as very vulnerable to continuing development and recreational pressures. However, this landscape character is considered to have a generally low sensitivity to routeing of a wood pole line, for the following reasons. It has a robust character, and could accommodate removal of some hedgerow trees without loss of such character. The overhead line would be visually well contained (from most viewpoints a relatively short length of the line would be visible). Sensitivity is higher in the immediate vicinity of Wat's Dyke (as the overhead line could have a greater impact if aligned parallel, compared to an alignment which crosses the historic feature). Sensitivity is also considered moderate in the central part of the area, around Park Eyton, where longer views are possible.

Impact prediction

14.124 From the A483(T), the route is aligned in a generally south-easterly direction, through agricultural land, crossing over Wat's Dyke at right angles. It takes a north-south, then east-west alignment in the vicinity of Park Eyton, in order to skirt around the edge of land within the Essential Setting of Wynnstay Park. Through the southern part of this character area the route follows the grain of the landscape, which is north-south, along the side of a wooded valley.

14.125 The route alignment has been selected to minimise the effects upon trees and other elements of the landscape character, such as ponds, historic parkland and Wat's Dyke. The strong rural character of this area would not be disrupted. There would be a low scale of effect upon the landscape character of a permanent and negative

nature. The significance of this effect, upon a landscape capable of absorbing such a development (low sensitivity), is considered **minor**. The significance of the effect upon the more sensitive landscape around Park Eyton is considered **moderate**.

12A Dee Ceiriog Wooded Valley and Riverside Meadows/Wooded River Gorge landscape types (formerly SP/72 Castle Mill)

14.126 These two areas are considered together, as they share the same landscape characteristics, but are divided by the county boundary (and England/Wales boundary) along the River Ceiriog.

Description of area local to route corridor (Northern bank of River Dee to eastern valley side of river Ceiriog - Coedleoedd to Bramble Wood)

14.127 The banks of the River Dee in this vicinity are characterised by steep slopes to the water's edge, almost entirely covered in woodland. Woods are predominantly mixed broadleaf, and include much ancient woodland. In between woodland blocks, there are small, irregularly shaped pockets of pasture, enclosed by hedgerows. There are a few remote properties, accessed via narrow country lanes.

14.128 The valley of the Ceiriog is not as steep-sided as the Dee near the confluence of these two rivers. The Ceiriog has a floodplain, and both this and the adjoining slopes support predominantly medium sized pasture fields, often enclosed with wire fencing rather than hedges, although the narrow, winding lanes through the area are hedged. There is a narrow strip of woodland along the banks of the Ceiriog, and woodland lines the upper slopes of the eastern bank. Landform and vegetation combine to create an attractive, secluded character, isolated from the wider landscape. There are small hamlets within this part of the Ceiriog valley, such as Pont-y-blew and Tenement. A high voltage power line occupies part of the valley, rising from the valley floor to cut through woodland on the upper slopes. The valley sides and woodland form an effective backdrop to most views of the power line, and it does not form a dominant element within the landscape.

Sensitivity to overhead line

14.129 The landscape character of the wooded river banks is considered highly sensitive to overhead line routeing. The remainder of this character area, comprising enclosed valley with a pasture mosaic, has a robust character capable of accommodating a wood pole line without significant disruption, and consequently would have a low sensitivity.

Impact prediction

14.130 As has been described in the section on effects upon designated landscapes, the route would not affect the wooded banks of the River Dee. The route across the Ceiriog valley, following the contours of the western bank, crossing directly across the riverside woodland (thereby minimising tree removal), and then rising straight up the eastern bank to exploit an existing gap through woodland, is considered to have a low scale of effect upon a landscape character of low sensitivity *(to this type of development)*, with an adverse effect of **minor** significance.

14.131 *(Note that this assessment differs from that for the Area of Special Landscape Character described above, as the designation encompasses both the Ceiriog valley and the slopes above, whereas this character area relates solely to the valley.)*

Principal timbered farmlands (formerly SP/43 St Martin's)
Description of area local to route corridor (Ceiriog valley to Wigginton)

14.132 The area around the large village of St Martin's comprises locally undulating topography between 120m and 130m AOD. Fields are mostly irregular, and tend to be of small size where gradients are steepest/most variable, and of medium size where the landscape is more rolling. Fields are predominantly hedged, with numerous hedgerow trees. There are only occasional small blocks of woodland, often associated with a pond or watercourse.

14.133 With the exception of the compact form of the settlement of St Martin's and the main roads through the area, this landscape is characterised by narrow, winding lanes and a scattered settlement pattern. Views tend to be filtered by a combination of landform and tree cover, although there are occasional opportunities for longer distance views in the more open areas. St Martin's does not impinge visually upon the surrounding rural character, as the village is largely enclosed by tree cover (except on the western side).

Sensitivity to overhead line

14.134 The variation and small scale of this landscape, with high potential for screening of long views, would give it a low sensitivity to wood pole line routeing. This would rise to moderate sensitivity in places where the landscape is more open, such as around Pentre Morgan, and on the upper slopes of the eastern side of the Ceiriog valley.

Impact prediction

14.135 The route would generally have a low scale of effect upon the landscape character north of St Martin's village, and a similarly low scale of effect upon the intricate landscape around Wigginton, resulting in effects of **minor** significance.

14.136 The proposed route would pass to the east of St Martin's between the village and Pentre Morgan. To maintain distance from the village and Pentre Morgan (listed building), the route alignment crosses the B5068 (Ellesmere Road) at a relatively elevated point, and is also likely to disrupt a line of trees immediately parallel to the road, some 50m to the south. This is considered a medium scale of effect upon a landscape of moderate sensitivity, resulting in an effect of **moderate** significance. A similar medium scale of effect, upon the moderately sensitive upper slopes of the Ceiriog valley (between Bramble Wood and Pen-y-Bryn), would result in a localised effect of **moderate** significance.

Lowland moors (formerly SP/57 New Marton)
Description of area local to route corridor (Wigginton to Rhosygadfa)

14.137 This small but distinct character area is centred around the Shropshire Union canal. The land is flat and poorly drained, with numerous ditches. Pasture fields are medium scale and regular in shape, bounded by thin hedges and ditches with occasional linear strips of willow and alder. There are few buildings within this flat landscape, with scattered farmsteads occupying higher ground to the east and west. It is an enclosed area of relatively open landscape, overlooked from surrounding land.

Sensitivity to overhead line

14.138 The character of this area is such that is has a high sensitivity to routeing of an overhead line. A linear feature could potentially form a dominant element in a flat landscape with occasional tree cover, disrupting the lower level (more subtle) pattern formed by ditches and the canal. However, views of the line (from within the area and the surroundings) would generally be backgrounded by the higher ground around.

Impact prediction

14.139 The scale of effect upon landscape character would be least if the proposed line crossed the canal 'floodplain' area in an east-west alignment, following the field boundary pattern. It would be greatest if parallel and close to the canal (which is aligned generally north-west to south-east in this vicinity). The proposed alignment falls somewhere between these two; the crossing of the canal is oblique, rather than direct, and south of New Marton lock the alignment is roughly parallel to the canal, although generally a field or two distant, on slightly higher ground. For this short section of the route (0.5km), the scale of effect is considered medium, upon a landscape character of high sensitivity, with an effect of **moderate** significance.

Principal settled farmlands (formerly OH10a & b Gobowen and Oswestry)
Description of area local to route corridor (Rhosygadfa to Oswestry- excluding the River Perry corridor)

14.140 This area comprises a gently rolling topography, with medium sized, generally regular field pattern. Fields are hedged, with occasional hedgerow trees. Woodland is present in blocks, concentrated around parklands such as Fernhill Hall and Park Hall, giving a wooded feel in places.

14.141 North of the River Perry the landscape has a strongly rural character. South of this shallow valley, built development (including linear developments such as railway lines and overhead power lines) impinges upon the character and the landscape appears to be less coherent and experiencing change. Views in both parts tend to be open, but this is highly dependent upon localised tree cover, with plantations often providing a wooded horizon/skyline.

Sensitivity to overhead line

14.142 The sensitivity of the northern part of this character area is considered moderate. The northern area has a more robust and intact pattern, but relatively little tree cover.

14.143 Potential for a wood pole line to disrupt/affect the landscape character of the area to the south (between Great Fernhill and Oswestry) is lower, with a moderate to low sensitivity. Infrastructure elements are characteristic of this area.

Impact prediction

14.144 In the northern part of this character area, between Rhosygadfa and the River Perry valley, the proposed route would follow an alignment which skirts around the highest area of land (thus avoiding the most visually prominent location) and is, for the most part, sympathetic to the regular field pattern. Few elements of the landscape would be directly affected. This is a low scale of effect upon a moderately sensitive landscape, resulting in an effect of **minor** significance.

14.145 In the southern part, approaching Oswestry from the north-east, the proposed route would follow an alignment sympathetic to the field pattern, but which would cut across the north-south grain of the landscape created by existing infrastructure elements. It would also cut through an avenue of trees along North Drive, necessitating at least some tree removal from this visually prominent linear feature. The scale of effect is considered medium, upon a landscape character of moderate to low sensitivity, resulting in an effect of **moderate** significance.

Lowland Moors (formerly SP/38 Halston Hall)
Description of area local to route corridor (River Perry valley – Fernhill pastures)

14.146 In the vicinity of the route corridor, this character area comprises a narrow linear strip of land along the shallow valley of the River Perry, between Gobowen and Fernhill Hall. It is situated between the northern and southern parts of the previous character area. The area is low-lying, poorly drained and a mosaic of ditches, wet pastures and woodland plantations. Some of the pastures are designated SSSI (Fernhill Pastures). The halls of Great Fernhill and Fernhill are situated on the fringes of this area. The landscape in the vicinity of these has an estate parkland character, with sandstone walls, carriage drives and ornamental tree planting. The landscape is medium in scale. Topography and amount of tree cover combine to create a sense of enclosure, and views tend to be short or filtered.

Sensitivity to overhead line

14.147 This character area was identified in Shropshire County Councils draft landscape assessment (2003) as being of high sensitivity to development generally, and is considered highly sensitive to overhead line routeing. There is a high potential for requiring tree removal, and the potential to disrupt parkland vistas from the halls. However, the high degree of screening afforded by numerous woodland blocks, and the mosaic, rather than regular landscape pattern, make this area more accommodating than more formal or open parkland landscapes.

Impact prediction

14.148 The proposed route alignment avoids direct effects upon Fernhill Pastures SSSI and follows along the edge of mature woodland plantation of Butts Wood. It crosses the River Perry directly, thereby minimising streamside woodland effects, but south of this cuts through an area of young plantation woodland for some 130 metres. The alignment avoids the buildings of Great Fernhill (listed building), but cuts across the estate drive near its junction with Whittington Road in an area of relatively open parkland landscape.

14.149 The alignment would have a low to medium scale of effect upon this highly sensitive landscape, with resulting **moderate** significance.

Mitigation

14.150 The proposed reinforcement has been developed through the iterative process of environmental assessment to minimise environmental effects as far as is possible, taking into account SP Manweb's statutory duties. The process of selection of the proposed route has been the most important and effective source of mitigation for the overhead line, as the most sensitive areas are avoided where possible. Additionally, the selection of support type (wood pole rather than steel lattice tower) is a form of mitigation at design stage.

14.151 Working areas and access tracks would be kept to a minimum and any areas disturbed would be reinstated, including the replacement of any sections of hedgerow removed (applies to construction access and underground cable sections).

14.152 Wood poles would be located close to woodland blocks and individual trees so that the trees provide screening or a backcloth effect.

Conclusions

14.153 The proposed overhead line would have effects of minor or moderate significance upon the locally designated areas of landscape within its immediate vicinity. The local designations primarily relate to the Dee and Ceiriog river valleys. The alignment has been selected to avoid effects upon the highly sensitive steeply wooded banks of the River Dee – and would have an effect of minor significance upon the character of this area.

14.154 The route does not directly affect any registered historic parks or gardens, or their essential settings, and would not affect the landscape character of these areas.

14.155 The proposed overhead line is likely to have an effect upon the landscape character within its immediate vicinity of minor significance for the most part. In some places, generally where the landscape is judged to have a moderate or higher sensitivity to the type of development proposed, there may be effects of moderate significance**, at a local scale**, upon landscape character. These sections have been identified as:

- around Park Eyton in the Welsh Maelor character type
- the upper slope on the eastern side of the Ceiriog valley, in the Principal Timbered Farmlands (St Martin's) character type
- between St Martin's and Pentre Morgan,around the Ellesmere Road area, in the Principal Timbered Farmlands (St Martin's) character type
- around the Shropshire Union canal, in the Lowland Moors (New Marton) character type
- within the River Perry valley, in the Lowland Moors (Halston Hall) character type; and
- the relatively open landscape between the River Perry and the A5, in the Principal Settled Farmlands (Gobowen and Oswestry) character type.

14.156 Together, these sections comprise approximately 30% of the overhead line route length (and consequently a smaller percentage of the total line route between Legacy and Oswestry, which also includes underground sections).

14.157 In summary, the effects upon landscape character are anticipated to be highly localised, and for the majority of the route will be **minor**, with no effects of greater than **moderate** significance.

15.0 EFFECTS ON ECOLOGY AND NATURE CONSERVATION

Introduction

15.1 This chapter provides an assessment of the likely significant ecological effects of the proposed overhead line. The proposed route comprises 20.3km of overhead line, with underground cable sections at the approaches to Legacy and Oswestry substations. The route is located partly in Wrexham, and partly in Shropshire.

15.2 The ecological assessment was undertaken upon the overhead line section of the proposed route, which is the part of the route for which S37 consent is sought. Information regarding the underground sections of the route is included where available (for example desk-top survey information regarding designated sites). Underground cable sections do not require S37 consent, but may have implications for protected species. The proposed method for addressing this aspect is outlined separately.

15.3 A detailed description of the proposed route is given in Chapter 11: The Proposed Route. Nature conservation designations were identified for a wide area during the route selection process; these are described in Chapter 7: Study Area Inventory. Reference should also be made to Chapter 18: Trees and Woodlands, which contains results of the detailed arboricultural survey undertaken, and an assessment of the likely effects of the development on trees and tree groups.

15.4 The approach for the ecological assessment follows '*Guidelines for Baseline Ecological Assessment*' (Institute of Environmental Assessment, 1995). The detailed methods for evaluation of effect significance follow IEEM '*Guidelines for Ecological Impact Assessment: (version 7 July 2006*).

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

15.6 All baseline ecological surveys and assessments have been completed by suitably qualified and experienced ecologists.

15.7 The following steps were 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 effects upon the valued ecological receptors.

Identification of ecological receptors

15.8 In order to identify potential ecological effects of development proposals the following 'receptors' are considered:

- Protected sites (statutory and non-statutory)
- Protected species

- Birds on the Red List of conservation concern, (as set out for 2002–2007 in Gregory et al (2002))
- Ancient Semi-Natural Woodlands
- UK Biodiversity Action Plan (UKBAP) Priority Habitats

15.9 The UKBAP, Wrexham BAP and Shropshire BAP include extensive lists of flora and fauna which may potentially be present within the area. However, the majority of these species would be unaffected by either the construction or operation of the proposed overhead line and so have not been considered as potential receptors for impact assessment unless they also fall into any of the above categories.

15.10 A description of the planning and legislative status of these receptors is presented at Appendix 15A. Local and regional planning policies that relate to nature conservation and development within Wrexham and Shropshire are identified in Appendix 7A.

Baseline ecological surveys

15.11 In order to identify which ecological receptors are present or potentially present within the vicinity of the proposed overhead line, baseline ecological surveys were conducted. The scope and geographical extent of baseline ecological surveys for the purposes of impact assessment was discussed with CCW and Natural England prior to determining a proposed route.

15.12 A summary of the survey methods and results is provided below. Appendices 15B – 15E provide further details.

Survey area

15.13 Detailed ecological surveys were undertaken based upon an 80m wide corridor within which the overhead line and its support poles would be sited (referred to as the **tolerance corridor for siting supports**). Stays to supports may extend outside this corridor by an estimated maximum of 5m. Further beyond this distance will be a working area where temporary effects may occur (for example due to construction of access tracks). For the purposes of survey, this was defined as a further 5m on either side, giving a minimum **ecological survey corridor** width of 100m. The width of the survey corridor increased beyond this minimum for various ecological receptors.

15.14 Desk-top survey extended to the underground sections of the proposed route. No field survey information was gathered for these sections. Underground cables will be located either in the roadway, or adjacent verge.

15.15 For the purpose of selecting a preferred and proposed route a larger study area was considered. Desk study was undertaken so that any significant ecological constraints (those that had a bearing on route selection) could be identified. This information is reported in the Nature Conservation section of Chapter 7: Study Area Inventory.

Survey methods

15.16 This section summarises the methods used for desk study, habitat and protected species surveys.

15.17 The following ecological surveys were undertaken between 2006 and 2008:

- Desk top Survey
- Extended Phase 1 Habitat Survey (including assessment for species of conservation concern)
- Amphibian Survey
- Badger Survey
- Bat Survey
- Breeding Bird Survey
- Otter Survey
- Water Vole Survey

Desk top survey

15.18 Information regarding historic species records, protected sites, land allocation, relevant policies and strategies for nature conservation was obtained from the sources listed in Table15.1. Information was obtained for a corridor of 1km width, centred on the tolerance corridor.

Table 15.1: Ecological information and consultations

CONSULTEE / SOURCE OF INFORMATION	NATURE OF INFORMATION SUPPLIED BY CONSULTEE
Magic Map: Multi-Agency Geographic Information for the Countryside	Online mapping system identifying statutory and rural designations, citations, natural area boundaries etc
UK Biodiversity Action Plan	Identification of national priority species and habitats known to occur in the region.
Shropshire Biodiversity Action Plan	Identification of local priority species and habitats known to occur in Shropshire
Wrexham Biodiversity Action Plan	Identification of local priority species and habitats known to occur in Wrexham
COFNOD North Wales Environmental Information Service	Locations of wildlife sites Records for protected/BAP species and habitats
National Biodiversity Network Gateway	Online national records database
Nature on the Map (Natural England)	Online mapping system for England for BAP habitats and protected sites
Shropshire Wildlife Trust	Locations of wildlife sites Records for protected/BAP species and habitats
Shropshire Badger Group	Badger records for the Shropshire section of the route
Oswestry Borough Council Unitary Development Plan (adopted 26th July 1999)	Delineation of protected sites, green corridors and land designations
Wrexham Borough Council Unitary Development Plan (adopted 14th February 2005)	Delineation of protected sites, green corridors and land designations
Planning Policy Statement 9/ Technical Advice Note 5	Guidance for planning policies and proposals in Wales affecting geology, landform, habitats and species

Extended Phase 1 habitat survey (including assessment for species of conservation concern)

15.19 An Extended Phase 1 Habitat Survey (JNCC 2003) was undertaken between August and mid-October in 2006, 2007 and 2008 and covered the ecological survey corridor (100m width). This is a standard method of survey providing an overview of key

habitats, wildlife corridors and the likely sites for species of conservation concern. Target notes provide a botanical list of species in the immediate area and any other additional information considered relevant.

Amphibian survey

15.20 Amphibian surveys were undertaken in June 2006, April 2007 and June 2008 by licenced great crested newt surveyors. Ponds were identified from examination of Ordnance Survey maps, aerial photographs and whilst conducting walkover for the extended Phase 1 habitat survey. Ponds within 150m of the ecological survey corridor were identified, giving a total survey corridor width of 400m for amphibians. A total of 50 ponds were identified within this survey corridor.

15.21 An additional 5 ponds were identified within 500m of the SAC, Johnstown Newt Sites (Wrexham). These ponds were included in the survey because this SAC, also known as Stryt Las A'r Hafod SSSI, is partly within the ecological survey corridor and is designated as an SAC and a SSSI because of its large great crested newt population. This wider survey area ensured that a more comprehensive picture of the distribution of great crested newts associated with this nationally significant population was established.

15.22 The amphibian survey strategy comprised:

- Visual survey of ponds/waterbodies including habitat survey form and photographic record;
- Egg-search of suitable aquatic vegetation in ponds to confirm presence/absence & breeding;
- Habitat Suitability Index (HSI) calculated for each pond
- Comparison with historic records to establish probable metapopulation boundaries and influences.

Badger survey

15.23 A survey looking for evidence of badger activity was undertaken on all land within the ecological survey corridor plus 30m either side, giving a survey corridor width of 160m for badgers. The badger survey was conducted during daytime visits to the site, in conjunction with the Phase 1 Habitat survey during 2006, 2007 and 2008.

Bat survey

15.24 There are no buildings within the proposed route corridor. Inspections for bat roost potential were undertaken as part of an arboricultural survey. Any mature trees and other trees with potential for roosting bats that were located within a survey corridor of 130m width were subject to a daytime ground based inspection during 2006, 2007 and 2008.

Breeding Bird Survey

15.25 Breeding bird surveys were conducted at two locations associated with a previous route alignment, now discounted, to the west of St. Martin's village. Whilst these locations are not now within the proposed route corridor, the surveys, along with desk-top records, produced sufficient data on the range of local bird species to enable the identification of potential receptors for impact assessment.

15.26 A breeding bird survey was implemented across land at Ifton Meadows LNR and land surrounding Ebnal Lodge Farm, Rhos y gadfa. These locations were identified for survey during discussions with Natural England and CCW, due to their potential value for birds and their location within the preferred route corridor at the time (now discounted). Ifton Meadows LNR is being actively managed for skylark and meadow pipit. Ebnal Lodge Farm is managed within the Higher Level Stewardship Scheme (HLS) for birds.

15.27 The breeding bird survey technique was based on the British Trust for Ornithology's (BTO) Breeding Bird Survey (BBS) method. Both sites were visited on 11th May 2007 and on 3rd July 2007.

Otter survey

15.28 Otter surveys were undertaken along the banks of watercourse sections (including adjacent habitat) within the ecological survey corridor plus 30m either side, giving a total survey corridor width of 160m for otters.

15.29 Otter surveys were conducted between March and October in 2006, 2007 and 2008. Otter fieldsigns were also looked for during water vole surveys undertaken at minor watercourses and ditches on various dates between August and October in 2006 and 2007 and during walkover assessments of minor route realignments in October and December 2008.

Water vole survey

15.30 Water vole surveys were undertaken along the banks of rivers, streams, ditches and ponds within the ecological survey corridor plus 30m either side, giving a total survey corridor width of 160m for water voles.

15.31 The water vole surveys were conducted between August and October in 2006 and 2007 and in October 2008.

Consultations

15.32 Consultations have taken place with a range of organisations with regard to ecological aspects of the development. The table below summarises the main points raised relating to nature conservation during the scoping process. These responses have been taken into consideration in the preparation of this assessment, and further consultations have been undertaken with statutory consultees to clarify issues and approaches.

Table 15.2 Nature conservation issues raised at scoping stage

Consultee	Points Raised
Department for Business Enterprise and Regulatory Reform	Address further level of survey work for European Protected Species(raised by Shropshire CC)
Welsh Assembly Government (Environment Division)	Basis of scoping out several items from ES needs to be fully detailed and justified in ES. European Protected Species considered should include GCN and Dormice – developments likely to effect on EPS will require licence application to WAG.
Natural England	The scope and surveys identified are appropriate. Provided the surveys and assessments are carried out thoroughly, the EIA should provide a suitable basis for a decision on the proposal to be made.
Countryside Council for Wales	Some lopping of branches of trees may be required within or adjacent to the boundary of the SSSI/SAC in this area (Johnstown Newt Sites SAC). This work would require consent from CCW, with details of the methodology and timing of the works provided in a method statement. A detailed method statement will also need be provided for the crossing of the rivers Dee and Ceiriog as both are designated as part of the Afon Dyfrydwy and Llyn Tegid/River Dee and Lake Bala SAC.
Environment Agency Wales	Ensure that there is no adverse effect upon the quality of the watercourses in the locality.
Environment Agency	Alignment in proximity to Fernhill Pastures SSSI; record of Long-eared bat roost in close proximity at SJ322326. Consult Natural England. Alignment crosses River Perry and Shropshire Union Canal. May be used as bird flight routes, therefore bird deflectors should be installed on the wires to reduce the potential for bird strikes. Pylon footings should be a minimum of 5m from the bank top of any watercourse/feature (inc. ponds).
Wrexham CBC	Confirms that the Scoping Report and Report of Consultation Nov 07 refers to sensitive sites within the authority which could experience potential effects and therefore are to be assessed within the ES.
Shropshire County Council (County Ecologist)	Consider potential effect of the spread of nutrient rich dust from arable land which could adversely affect priority habitats or waterbodies. Consider working areas and crossing of water courses as sources of environmental effects. Consider disruption to bat flight paths under potential environmental effects. Consult historic records in predicting effects. Consult Shropshire Botanical Society and Shropshire Badger Group in addition to Shropshire Wildlife Trust. Consider Great Crested Newts and Dormice as potential receptors as European Protected Species. Dormice have been found in woodlands south and west of Oswestry. Good dormouse habitat should be surveyed as a precaution. It should not be implied that BAP habitats are not important; they are clearly a material consideration in planning terms. Consider potential effects from loss of trees/woodland to give power lines the required clearance and also from any fragmentation of hedges Dormice and BAP species need to be considered as receptors Discuss need for bat emergence surveys with Natural England Discuss scope of surveys for GCN with Natural England (considered too low in scope).
Oswestry BC (Chief Executive)	Perceived scale of effect upon natural flora, fauna and ecology causing concern.

Results of baseline surveys

15.33 The results of the baseline surveys are summarised below. Detailed results are provided in Appendices 15B and 15C.

Desk top survey

15.34 Figure 15.1 illustrates statutorily protected and non-statutorily protected sites within the desk-top survey corridor (1km width).

Statutorily protected sites

15.35 There are two SACs within the desk-top survey corridor:

- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid; and
- Johnstown Newt Sites (Wrexham)

15.36 The tolerance corridor for siting supports crosses the River Dee and Bala Lake SAC in two places, once across the River Dee and once across its tributary, the River Ceiriog. The corridor also crosses the northern edge of Johnstown Newt Sites SAC.

15.37 There are five SSSIs within the desk-top survey corridor:

- Afon Dyfrdwy (River Dee)
- River Dee (England)
- Stryt Las A'r Hafod (Wrexham)
- Nant-y-Belan and Prynela Woods (Wrexham)
- Fernhill Pastures (Shropshire)

15.38 Ifton Meadows Local Nature Reserve, in Shropshire, is the only local nature reserve within the desk-top survey corridor.

15.39 Further details of the nature conservation importance of the statutorily designated sites are given in Chapter 7: Study Area Inventory, as these sites were taken into consideration during the process for selecting a route.

Non-statutorily protected sites

15.40 There are seven sites of local wildlife value within the desk-top survey corridor:

- Erddig Estate (SJ 319470)
- Caldecott's Wood (SJ 336438)
- Nanterral Wood (SJ 334426)
- Moor Wood (SJ 324407)
- Bola's Dingle (SJ 311390)
- Flannog Wood (SJ324402)
- Fernhill (non SSSI pastures) (SJ323327)

15.41 Moor Wood is the only one of these sites crossed by the tolerance corridor for the proposed route.

15.42 A further three sites of local wildlife value within the desk-top survey corridor for underground sections of the route in Legacy and Oswestry, namely Legacy Substation (SJ294484), Crematorium (SJ298478) and Old Oswestry (SJ294311).

Ancient semi-natural woodlands

15.43 The tolerance corridor would impinge upon one area of Ancient Semi-Natural Woodland (ASNW), namely Bramble Wood, on the eastern valley slope of the River Ceiriog. In this vicinity the corridor occupies a gap in the woodland, created during installation of a gas pipeline.

15.44 A further two areas of ASNW, Wigginton Wood, east of St Martin's and Sodylt Wood, north of Glynmorlas, lie within the desk-top survey corridor but are not crossed by the tolerance corridor.

Protected species and Red List birds

15.45 The UK Biodiversity Action Plan (UKBAP), Wrexham BAP (WBAP) and Shropshire BAP (SBAP) include extensive lists of flora and fauna which may potentially be present within the area. However, the majority of these species would be unaffected by either the construction or operation of the proposed overhead line. Table 15.3 below identifies those species with statutory protection and bird species that are listed on the WBAP or SBAP, which are potentially present within the desk-top survey corridor (1km width). The Red/Amber List status of bird species is also provided. Desk top records are presented at Appendices 15B and 15C.

Table 15.3: Protected species and bird species listed on the WBAP and SBAP

Species	UK BAP	SBAP	WBAP	Conservation List (Birds only)	Statutory Protection
Badger *Meles meles*	×	×	✓	n/a	Protection of Badgers Act 1992
Barn owl *Tyto alba*	×	×	✓	Amber	Appendix II of the Bern Convention; Full protection, Schedule 1, *Wildlife and Countryside Act, 1981*
Brown Hare *Lepus europaeus*	✓	✓	×	n/a	Appendix III Bern Convention
Bulfinch *Pyrrhula pyrrhula*	×	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Common pipistrelle bat *Pipistrellus pipistrellus*	×	✓	×	n/a	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* Schedule 2*, Conservation (Natural Habitats & c.) Regulations 1994*
Corn bunting *Miliaria calandra*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Curlew *Numenius arquata*	×	✓	×	Amber	Protected at the nest, *Wildlife and Countryside Act 1981*
Dipper *Cinclus cinclus*	×	✓	×	Not Red or Amber	Protected at the nest, *Wildlife and Countryside Act 1981*
Dormouse *Muscardinus arvellarnarius*	✓	✓	×	n/a	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* Schedule 2*, Conservation (Natural Habitats & c.) Regulations 1994*

Species	UK BAP	SBAP	WBAP	Conservation List (Birds only)	Statutory Protection
Great crested newt *Triturus cristatus*	✓	✓	✓	n/a	Annexes II and IV of the EC Habitats Directive; Appendix II of the Bern Convention; Schedule 5 of the Wildlife and Countryside Act 1981.
House Sparrow *Passer domesticus*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Lapwing *Vanellus vanellus*	×	✓	×	Amber	Protected at the nest, *Wildlife and Countryside Act 1981*
Lesser horseshoe bat *Rhinolophus hipposideros*	✓	✓	✓	n/a	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* Schedule 2*, Conservation (Natural Habitats & c.) Regulations 1994*
Linnet *Carduelis cannabina*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Otter *Lutra lutra*	✓	✓	✓	n/a	Schedule 5 & 6 of the Wildlife and Countryside Act 1981; Annexes II and IV of the EC Habitats Directive; Appendix II of the Bern Convention
Reed bunting *Emberiza schoeniclus*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Ring ouzel *Turdus torquatus*	✓	✓	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Sky lark *Alauda arvensis*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Snipe *Gallinago gallinago*	×	✓	×	Amber	Protected at the nest, *Wildlife and Countryside Act 1981*
Song thrush *Turdus philomelos*	✓	✓	✓	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Turtle dove *Streptopelia turtur*	×	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Tree sparrow *Passer montanus*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*
Water vole *Arvicola terrestris*	✓	✓	×	n/a	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981*
Yellowhammer *Emberiza citrinella*	✓	✓*	×	Red	Protected at the nest, *Wildlife and Countryside Act 1981*

Key to table

UKBAP = UK Biodiversity Action Plan
SBAP = Shropshire Biodiversity Action Plan
WBAP = Wrexham Biodiversity Action Plan
RED = red list of conservation concern (at high risk) set out for 2002–2007 in Gregory et al (2002)

AMBER = amber list of conservation concern (at moderate risk) set out for 2002–2007 in Gregory et al (2002)
**** = species are listed within SBAP 'Farmland Seed-Eating birds' BAP***

Extended Phase 1 habitat survey (including assessment for species of conservation concern)

15.46 Figures 15.2 – 15.17 illustrate Phase 1 Habitat Survey results. Drawings are numbered 1 to 16 from north to south along the route. Figure 15.18 provides a location plan for the detailed drawings.

15.47 The following Phase 1 habitats are present:

- Trees
- Semi-natural broadleaved woodland
- Broadleaved and mixed plantation woodland
- Scattered scrub and dense/continuous scrub
- Improved grassland
- Semi-improved grassland
- Arable land
- Amenity grassland
- Marshy grassland
- Swamp
- Inundation vegetation
- Tall ruderal herbs
- Species-rich hedgerow
- Species-poor hedgerow
- Species-rich hedgerow with trees
- Species-poor hedgerow with trees
- Defunct species rich hedgerow
- Defunct species-poor hedgerow
- Standing water
- Running water
- Wet ditch
- Dry ditch

15.48 The following UKBAP priority habitats are present:

- Arable field margins (also Shropshire BAP)
- Hedgerows (also Shropshire BAP)
- Lowland fens
- Lowland mixed deciduous woodland (also Shropshire BAP; 'Woodland' is a Wrexham BAP habitat)
- Ponds ('Standing open water' is a Shropshire BAP habitat; 'Pond' is a Wrexham BAP habitat)
- Rivers ('Rivers and Streams' is a Shropshire BAP habitat; 'River, stream and canal' is a Wrexham BAP habitat)

15.49 The assessment for species of conservation concern conducted during the Phase 1 Habitat Survey confirmed that the protected species and Red List birds that could potentially be present (Table 15.3) were either present or potentially present due to the availability of suitable habitat.

Amphibian survey

15.50 The desk-top survey revealed 24 records of great crested newts within 500m of the tolerance corridor. Seven of the records are within the amphibian survey corridor (ecological survey corridor plus 150m either side), all of these being in Wales. The records are for ponds P9, P10, P13, P16, P17, P20 and P26. However, these records are from 1992 and 1993, since which time the suitability of these ponds for great crested newts may have changed.

15.51 A total of 50 ponds were surveyed within the amphibian survey corridor for the proposed route. Pond 62 has been partially surveyed (HSI assessment only) due to seasonal restrictions following its identification in late 2008 during walkover survey for a minor realignment of the proposed route. Pond numbering does not follow sequentially, as ponds which were surveyed in connection with previous route alignments (a further 11 ponds) have been omitted.

15.52 Great crested newt eggs were recorded at three ponds within the amphibian survey corridor. Ponds P10, P13 and P16 are located to the east of Ruabon (see Figures 15.4 & 15.5).

15.53 Figure 15.19 identifies the locations of additional ponds surveyed in the vicinity of Johnstown Newt Sites SAC, but outside the amphibian survey corridor for the proposed route. Great crested newt eggs were identified at pond SAC1 (Appendix 15D).

15.54 A total of 27 ponds within the amphibian survey corridor were found to have an HIS score of ‘average’, ‘good’ or ‘excellent’. These ponds have athe conditions in which great crested newts could survive, although this does not necessarily mean that they are present.

15.55 For HSI assessments, photographs and descriptions of each pond refer to Appendices 15B, 15C and 15D.

Badger survey

15.56 Extensive evidence of badger activity was obtained during the desk-top survey. The habitat surrounding the proposed route corridor is very favourable for badgers, comprising open grassland fields and woodland areas.

15.57 Badger activity was recorded at several locations, predominantly in the Shropshire part of the survey corridor. Exact details of badger sett locations are kept confidential as badgers can be subject to persecution. Details are contained within Confidential Appendix 15E (only available to certain parties)

Bat survey

15.58 Records of common pipistrelle and lesser horseshoe bat were identified during the desk-top survey.

15.59 Trees and groups of trees within the arboricultural survey corridor with a high potential to support bat roosts are indicated on Figures 15.2-15.17, Phase 1 habitat survey and protected species. A total of 324 individual trees and 31 tree groups within the 130m wide arboricultural survey corridor have potential to support roosting bats.

Breeding bird survey

15.60 Two breeding bird surveys were conducted on sites lying beyond the proposed route corridor, on a former route alignment. Results are included as they provide information regarding the range of bird species in the locality. The results are as follows:

15.61 Forty different species were detected at Ifton Meadows LNR and 44 different species were detected at Ebnal Lodge Farm during the course of the 2007 Breeding Bird Survey.

Birds of conservation concern

15.62 None of the bird species recorded during the breeding bird surveys at Ifton Meadows and Ebnal Lodge Farm are statutorily protected apart from the protection afforded to all wild birds under the *Wildlife and Countryside Act 1981 (as amended)*. Birds of Conservation Concern (Red List, Amber List, UKBAP and /or SBAP priority species) that were identified during survey are listed in Table 15.4.

Table 15.4: Birds of Conservation Concern identified at Ifton Meadows and Ebnal Lodge Farm, 2007 Breeding Bird Surveys

Species	Status
Dunnock	UKBAP/A
Goldcrest	A
Housemartin	A
House sparrow	UKBAP/R/S
Kestrel	A
Lapwing	A/S
Lesser black backed gull	A
Mistle thrush	A
Reed bunting	UKBAP/R/S
Skylark	UKBAP/R/S
Song thrush	UKBAP/R/S
Starling	UKBAP/R
Swallow	A
Swift	A
Willow warbler	A
Yellowhammer	UKBAP/A

Note:
UKBAP = UKBAP Priority Species;
S = Shropshire LBAP species;
R = UK Red list species;
A =UK Amber list species

Otter survey

15.63 Desk top survey revealed 22 records of otter within 500m of the tolerance corridor. These records were from four locations within the Chirk Castle Park region and date as far back as 1991.

15.64 Otter field signs were found on the River Dee and River Ceiriog in 2006, on the River Perry in 2007 and again on the River Dee in 2008. Further details are provided in Confidential Appendix 15F.

Water vole survey

15.65 No desk-top records for water voles were obtained within the ecological survey corridor, the nearest being 250m distant. Suitable habitat for water voles was identified and surveyed.

15.66 Evidence of water voles was recorded on the rivers Ceiriog, Dee and Perry, and on a ditch south of the Shropshire Union Canal.

Evaluation of receptors

15.67 The IEEM EcIA guidelines (2006) recommend that the value or potential value of an ecological resource or feature should be determined within a defined geographical context. It is recommended that the following frame of reference be used (or adapted to meet local circumstances):

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

15.68 Table 15.5 summarises the ecological receptors present, as established through baseline ecological surveys, and their nature conservation value. Fish species within the River Dee and Bala Lake/Afon Dyfrydwy a Llyn Tegid SAC have not been assessed as individual receptors but are considered as part of the SAC as a whole.

Table 15.5 Nature conservation value of ecological receptors

Receptor	Planning/Legislative Status	Nature Conservation Value	Comments
Johnstown Newt Sites SAC / Stryt Las A'r Hafod SSSI	Internationally / Nationally designated site. UKBAP, SBAP, WBAP (woodland)	International	This is an internationally designated site. Its value is determined by its designation.
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee/ Afon Dyfrdwy SSSI	Internationally / Nationally designated site. UKBAP, SBAP, WBAP	International	This is an internationally designated site. Its value is determined by its designation.
Nant-y-Belan and Prynela Woods SSSI (Wrexham)	Nationally designated site. UKBAP, SBAP, WBAP	National	This is nationally designated site. Its value is determined by its designation.
Fernhill Pastures SSSI	Nationally designated site. UKBAP priority habitat, Lowland Fens	National	This is a nationally designated site. Its value is determined by its designation.
Moor Wood County Wildlife Site	Wrexham Council Designation. UKBAP, SBAP, WBAP	County	This is a Local Site (DEFRA, 2006). Its value is determined by its designation.

Receptor	Planning/Legislative Status	Nature Conservation Value	Comments
Bramble Wood Ancient Semi-Natural Woodland (ASNW)	Planning Policy Statement 9 (PPS9) stresses the importance of retaining ASNW. Site qualifies as UKBAP priority habitat Wet Woodland , SBAP, WBAP	County	Ancient woodlands are '…*valuable for the diversity of species and for the longevity of woodland habitat…' (PPS9).* This receptor is considered important at 'County' level, despite not being designated at this level, as the habitat it contains cannot be restored or created within a reasonable time frame.
Arable Field Margins	UKBAP/SBAP	Local	Although limited in number within the route corridor, examples of this habitat are common at national or county level.
Hedgerows	UKBAP/SBAP 'Important' hedgerows are protected under *The Hedgerows Regulations 1997*	Local	Individual hedgerows may be 'Important', species rich, species poor, intact or defunct. However, no individual hedgerow could be said to be of county level importance.
Lowland Fens	UKBAP	County-National	This habitat is uncommon at county level and is only common within a limited number of counties nationally.
Lowland Mixed Deciduous Woodland (and individual mature trees)	UKBAP, SBAP, WBAP	Local	This habitat is sufficiently common at county level for this receptor to be of no more than Local value.
Ponds	UKBAP, SBAP, WBAP	Local	This habitat is sufficiently common at county level for this receptor to be of no more than Local value.
Watercourses	UKBAP, SBAP, WBAP	Local-International	This receptor includes a range of receptors from ditches and streams through to Internationally designated sites.
Badger	Protection of Badgers Act 1992. WBAP	Immediate zone of influence	This species is protected for reasons of welfare rather than because it is in decline. The main threat to the species is from illegal persecution. Effects of the scheme may be disturbance to specific setts which may be identified within the route corridor.

Receptor	Planning/Legislative Status	Nature Conservation Value	Comments
Barn owl	Appendix II of the Bern Convention; Full protection, Schedule 1, *Wildlife and Countryside Act, 1981*. WBAP	District	Barn owl territories range from roughly 2 to 4 square km and territories do not normally overlap. An effect on an individual roost site would therefore have an effect on this receptor at no more than a district level (NB no buildings lie within the route corridor, so roosts potentially affected would be those located in trees affected by construction works – none are currently identified).
Bats	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* Schedule 2, *Conservation (Natural Habitats & c.) Regulations 1994. UKBAP, SBAP, WBAP (except Common pipistrelle which is SBAP only)*	Immediate zone of influence	Bats may potentially roost in trees affected by construction works. However the effect on bat species of such works will only be in the 'Immediate zone of influence' as such minimal disturbance would not be sufficient to have an effect on any viable population which may be present.
Brown Hare	Appendix III Bern Convention. UKBAP, SBAP	Immediate zone of influence	Brown hare have no permanent structures as resting places and live entirely above ground in temporary lays. Disturbance to this receptor would therefore only be in the 'Immediate zone of influence'
Dormouse	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* Schedule 2, *Conservation (Natural Habitats & c.) Regulations 1994.* UKBAP, SBAP	Immediate zone of influence	Dormice may potentially nest in trees or on the ground in areas affected by construction works. However the effect on the dormouse receptor of such works will only be in the 'Immediate zone of influence' as such minimal disturbance would not be sufficient to have an effect on any viable population which may be present.

Receptor	Planning/Legislative Status	Nature Conservation Value	Comments
Farmland Birds	Various UKBAP, SBAP, WBAP species - protected at the nest, *Wildlife and Countryside Act 1981*	District	Off-site surveys of Ebnal Hall Farm and Ifton Meadows LNR indicate that arable land in the locality is potentially of local importance for farmland birds. Species of particular note include lapwing which are declining in Shropshire. However there are no sites on the proposed route itself that have been designated as having local importance for farmland birds. The proposed route as a whole is considered to have no greater then district importance for farmland birds.
Great crested newt	Annexes II and IV of the EC Habitats Directive; Appendix II of the Bern Convention; Schedule 5 of the Wildlife and Countryside Act 1981. UKBAP, SBAP, WBAP	District	This species is widespread and numerous within Shropshire and Wrexham, although internationally rare. The effect of construction works could potentially be of District significance due to the concentration of animals which could be affected near to Johnstown Newt Sites SAC. The small footprint of the development works limits the value of this receptor to this level.
Otter	Schedule 5 & 6 of the Wildlife and Countryside Act 1981; Annexes II and IV of the EC Habitats Directive; Appendix II of the Bern Convention. UKBAP, SBAP, WBAP	County	Otters can have extensive home ranges in the region of 50km. Only a small number otters may be present within a catchment at any one time. Effects on this receptor are therefore likely to be of County significance.
Water vole	Full protection, Schedule 5 & 6 *Wildlife and Countryside Act 1981* UKBAP, SBAP	District	Water vole has been identified at three locations during survey. This receptor could easily relocate if appropriate mitigation measures were taken. Without such measures the effect could be at a District level.

Baseline projection

15.69 The fate of wildlife habitats and the species that depend on them will be determined by the extent to which agricultural management practices incorporate measures sympathetic to wildlife. Assuming that the land within the proposed route corridor remains largely within agricultural use with hedgerows and other field margins maintained and the use of agricultural chemicals moderated, the majority of habitats and species currently present should remain stable. An exception to this may be the

pond habitats, which will gradually silt up and become dry through natural succession unless minimal management work is undertaken. However it would be preferable to allow this natural succession to proceed and for new ponds to be created to maximise the biodiversity within these habitats.

Identification of potential effects

15.70 Wood pole line construction follows a standard sequence of activities. The design and layout of the development is described at Chapter 4: Project Characteristics. The design has taken into account where possible, areas of ecological sensitivity identified during the field surveys and desk-based study (including designated sites of nature conservation interest and key areas of foraging and breeding habitat for protected species). The proposals therefore include much 'embedded mitigation' incorporated in the project design.

15.71 In terms of ecological effects, the development will result in the loss of small areas of open ground including improved grassland, semi-improved grassland, amenity grassland and arable land. There will also be losses of individual mature trees and tree groups.

15.72 Trees which could impinge upon the safety clearance required for overhead conductors will be subject to ongoing management during the operation of the overhead line. Trees or tall hedgerows which currently have the potential to fall within this zone will be lowered to a height conducive with the safe operation of the overhead line during the construction phase and will be maintained within this safe height during the operation of the overhead line.

15.73 These losses will be experienced during the construction phase of the development and will be permanent effects associated with the siting of wooden poles for the overhead line.

15.74 Consultees raised the potential for operational phase effects upon bird flight paths along watercourses, particularly along the River Perry and Shropshire Union Canal. There is also the potential for tree removal to have an effect upon bat foraging and flight lines.

15.75 Additional effects experienced during the construction phase will be those associated with construction activity; noise, vibration, the temporary destruction of open ground habitats resulting from the creation of working areas and access routes. These activities will only continue as a result of routine or emergency maintenance work and will generally be absent during the operational phase.

15.76 There is the potential for construction activities to cause pollution of watercourses, either through run-off of sediment from temporary access tracks and working areas, or through spillage of fuel oils.

15.77 There is no anticipated decommissioning phase or restoration phase included in the proposals.

Method of assessment

15.78 IEEM guidance recommends that effects, which are termed 'impacts' in the guidance, should either be described as adverse or positive. Impacts are considered to be either significant or non-significant rather than using grades of significance.

15.79 The criteria and standards used for determining whether ecological effects are significant vary and are often subjective, requiring professional judgement. IEEM EcIA 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".*

15.80 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".*

15.81 The method of assessment is as follows. The value of the receptor is defined as presented in Table 15.5. The value of a receptor is described in terms of the scale at which it has significance, ranging from 'international' to 'immediate zone of influence only'.

15.82 For each receptor, a judgement is made as to what comprises its integrity in the context of the IEEM Guidelines for EcIA. The anticipated effects of the scheme on each receptor are described and a judgement made as to whether its integrity is affected. Where no adverse effect is anticipated, this is recorded and no further assessment is made.

15.83 Where a potential adverse effect is anticipated, mitigation is considered. A further assessment is made as to whether the mitigation alleviates the potential adverse effect. If no residual effect is anticipated following mitigation, this is recorded and no further assessment is made.

15.84 Where an adverse effect is anticipated after mitigation, this is recorded as a significant effect. Reference is made to the value of the receptor to ascribe a geographical scale for the significance of effect.

15.85 The assessment of ecological effects has been undertaken on the **optimised proposed route,** as described in Chapter 11: The Proposed Route. This optimised proposed route is a preferred centreline with known pole support positions. The route is located entirely within the tolerance corridor for siting supports, and hence also within the area for which ecological survey information has been obtained.

15.86 As consent is sought for a tolerance corridor, rather than a centreline for the route, the effects described are indicative. However, there is a presumption in routeing of overhead lines that ecologically sensitive sites are avoided where possible, so it is highly unlikely that effects would be significantly worse than described should minor modifications to the route be necessary.

15.87 Both the optimised proposed route and the corridor for siting supports are shown on Figures 15.2-15.17, which show ecological survey results.

Assessment of effects

15.88 The following section describes the potential effects upon ecological receptors, describes any mitigation measures proposed, and describes the significance of the residual effects. Throughout, assessment of significance assumes that all mitigation measures have been successfully implemented.

15.89 The areas of tree groups and quantity of individual trees likely to be affected by the optimised proposed route have been assessed and reported in Chapter 18: Trees and Woodlands. The ecological implications of the results are assessed within this chapter.

15.90 Table 15.6 summarises the relationship between each receptor (designated sites, priority habitats and protected species) and the proposed route.

Table 15.6 Locations of ecological receptors in relation to proposed route

Receptor	Nature Conservation Value	Location within survey area
Johnstown Newt Sites SAC / Stryt Las A'r Hafod SSSI	International	Tolerance corridor and optimised proposed line crosses site See 'Lowland Mixed Deciduous Woodland' receptor below
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee/ Afon Dyfrdwy SSSI	International	Tolerance corridor and optimised proposed line crosses site in two places
Nant-y-Belan and Prynela Woods SSSI (Wrexham)	National	Tolerance corridor crosses site
Fernhill Pastures SSSI	National	Tolerance corridor does not cross site. Optimised proposed line 105m from SSSI boundary at nearest point.
Moor Wood County Wildlife Site	County	Tolerance corridor and optimised proposed line cross site in two locations
Bramble Wood Ancient Semi-Natural Woodland (ASNW)	County	Tolerance corridor and optimised proposed line cross site. However, the line will pass through an existing gap in the woodland created during previous pipeline construction.
Hedgerows	Local	126 hedgerows are crossed by the overhead line. Over half are species rich. Due to the abundance of associated features and the number of interconnections generally present it is assumed that all these hedgerows would qualify as 'Important' under *The Hedgerows Regulations 1997* and hence are statutorily protected.
Arable Field Margins	Local	Approximately 10% of field boundaries crossed by the overhead line are of this type. Remainder are grazed.
Lowland Fens	County-National	Tolerance corridor and optimised proposed line cross this habitat
Lowland Mixed Deciduous Woodland (and individual mature trees)	Local	Tolerance corridor and optimised proposed line cross this habitat
Ponds	Local	12 ponds lie within the tolerance corridor. No pond is directly affected by a pole position.
Watercourses	Local-International	See 'River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee / Afon Dyfrdwy SSSI'
Badger	Immediate zone of influence	Present within locality. Dynamic species, precise sett locations may vary from year to year.
Barn owl	District	Mature trees which may provide roosting and nesting sites will be lost. Dynamic species, nest sites may vary from year to year
Bats	Immediate zone of influence	All hedgerows are considered to be valuable commuting corridors for bats. Trees and groups of trees with potential for use by roosting bats have been identified through survey.

Receptor	Nature Conservation Value	Location within survey area
Brown Hare	Immediate zone of influence	This is a dynamic species with no permanent resting places but temporary resting places will be present within the tolerance corridor.
Dormouse	Immediate zone of influence	All hedgerows and mature woodland are considered to be potential habitat for dormice.
Farmland Birds	District	There is potential nesting bird habitat throughout the tolerance corridor.
Great crested newt	District	Great crested newts identified at 3 ponds within amphibian survey corridor and one further pond within 500m of Johnstown Newt Sites SAC. Newts live away from ponds outside of the breeding season.
Otter	County	The tolerance corridor and optimised proposed line cross the River Dee, the River Ceiriog and the River Perry. Otter presence found at all 3 locations.
Water vole	District	Water vole field signs were recorded on the River Dee, the River Ceiriog, the River Perry and a ditch just south of the Shropshire Union Canal.

Mitigation measures generally

15.91 The following measures will be employed to avoid, reduce or offset potential effects upon ecological receptors in general. Further detail is provided, where necessary, during consideration of individual receptors in the following paragraphs.

15.92 In order to avoid damage to habitats, ecological constraints were considered at route selection stage. Specialist ecological advice will continue during detailed siting of pole positions in sensitive habitats and for precise siting of temporary access tracks and other site infrastructure.

15.93 Working areas will be maintained to a strict minimum, with demarcation of sensitive habitats to ensure construction workers operate within the agreed working limits.

15.94 Detailed method statements will be prepared in advance of construction, in conjunction with ecological specialists, for all activities that have the potential to adversely affect sensitive habitats. The implementation of best practice method statements for construction works will minimise the effects on species of conservation concern. Where necessary, the method statements will be approved under Natural England/CCW licences.

15.95 To minimise the risk of pollution, a construction methods statement will be provided in accordance with best practice guidance. This will be incorporated within the construction Environmental Management Plan (EMP) and be prepared in advance of construction works.

15.96 To minimise the effects of disturbance upon fauna, pre-construction surveys of protected mammal species potentially present will be undertaken.

15.97 A further general measure to minimise disturbance will be to avoid the use of artificial lighting, and not starting construction work earlier than 1 hour after sunrise, or finishing later than 1 hour before dusk.

15.98 All contractors working on the site will be given ecological awareness training prior to the onset of construction and will be made aware of the presence of protected and

sensitive species and the importance of implementing the species mitigation measures described herein.

Johnstown Newt Sites SAC/Stryt Las A'r Hafod SSSI

15.99 The site is designated because of its value to internationally important great crested newt populations. The integrity of the site depends on the continued presence of ponds (newt breeding habitats) and associated woodland, grassland and scrub (terrestrial habitats). Integrity also depends on the site being managed to maintain these habitats in a favourable condition.

15.100 There will be temporary disturbance to an area of up to 600m^2 of this 69.4 hectare site during construction resulting from the siting of a single wooden pole on the eastern boundary of the site. A small number of trees will undergo minor lopping and there will also be a permanent effect on a woodland area of approximately 600m^2 which will be subjected to ongoing management in order to keep the line of the conductors clear. Siting of the single pole is within an area which is currently dominated by ruderal herbs and is located on the verge of a road. No trees will need to be felled in this area. The ongoing management of the small area of woodland on the periphery of the SSSI will have no effect on the integrity of the broad-leaved plantation woodland.

15.101 A method statement will be produced, in line with best practice guidance, regarding these construction related works. Ongoing management works will be undertaken in accordance with best practice guidance.

15.102 The site is an SAC and SSSI, designated due to the internationally significant population of great crested newt. No newt breeding habitats would be affected. There is the potential for a short term negative effect on great crested newts in 600m^2 of terrestrial habitat during the construction phase of the overhead line. Due to the small scale of the works, which will affect much less than 0.1% of the area of the SAC this would not be a significant effect on either the great crested newt population or the SAC/SSSI.

15.103 Mitigation in the form of prior strimming and hand searching will be implemented under a Welsh Assembly Government (WAG) great crested newt licence. Great crested newts will be relocated to adjacent habitat unaffected by works. These measures will minimise any potential effect on this species, the presence of which is the primary reason for the designation of the site. The erection of the pole will be completed within a day, with no excavation holes being left open overnight (as the expected lifespan of newts is in excess of eight years, this period of disturbance will not be significant for individual newts). With or without the adoption of the mitigation measures outlined, the residual effect of the construction phase upon the integrity of Johnstown Newt Sites SAC receptor **will not be significant**.

15.104 The operational phase of the overhead line, including the ongoing management of the area beneath the conductors, will have **no effect** on great crested newts.

River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee/Afon Dyfrdwy SSSI

15.105 The integrity of this river ecosystem depends on maintenance of high water quality and lack of disturbance to channel-bed, banks, riparian habitats and tributary streams. The availability of continuous bank woodland and grassland is also important for otters. Integrity also depends on natural fluvial processes being allowed

to continue without excessive modification from engineering or other works on banks or in the floodplain.

15.106 This SAC/SSSI site extends over 1,300 hectares. The overhead line route crosses the River Dee within this SAC/SSSI site, approximately 450m upstream of the confluence of the Dee and Ceiriog rivers. This SAC/SSSI also includes the River Ceiriog and the overhead line route crosses this watercourse approximately 850m upstream of its confluence with the Dee.

15.107 At the Dee crossing point, one pole position is located within the SAC/SSSI boundaries. Although the erection of the pole will require a working area of up to 600m^2, only a proportion of this will be within the SAC/SSSI boundary. The river is lined on either side with lowland mixed deciduous woodland dominated by alder and approximately 1200 m^2 of this habitat will be affected (some tree removal and some tree lopping) where it conflicts with the position of the supports and the line of the conductors. This loss of trees will not have a significant effect on the SAC/SSSI.

15.108 At the Ceiriog crossing point, no pole positions are located within the SAC/SSSI boundaries. A small amount of lowland mixed deciduous woodland (430m^2) within the SAC/SSSI boundary will be affected where it conflicts with the line of the conductors. This loss of trees will not have a significant effect on the SAC/SSSI.

15.109 There are potentially significant negative effects on the Dee and Ceiriog watercourses that could arise from pollution incidents during construction activities. For example, increased sediment loading of these watercourses would degrade the quality of this protected habitat and would be a negative effect on dependent fauna and flora.

15.110 The alien invasive weed Japanese knotweed (*Fallopia japonica*) is present along the southern bank of the River Dee at the proposed overhead line crossing point and is present on both banks of the River Ceiriog at the proposed crossing point. Without the implementation of an appropriate method statement, construction works could lead to the spreading of this plant, which would be an offence under the *Wildlife and Countryside Act 1981, as amended*.

15.111 Construction method statements will be produced in advance of construction works, in accordance with best practice guidance, relating to the following activities:

- Water quality (sedimentation control)
- Track and drainage management
- Ditch/stream crossings
- Management of soil storage areas
- Water quality (oil, fuel and chemical contamination)
- Japanese knotweed management

15.112 The presence of otters is a contributory factor to the SAC/SSSI designations and otter activity has been detected within the survey corridor at the points where this crosses this SAC/SSSI. Otter holts are present on the banks of the Dee. These are located approximately 500m upstream from the overhead line crossing on the north bank and 250m upstream from the overhead line crossing on the south bank. However, the construction of the overhead line will not cause disturbance to this species in these places of shelter located at such distances from the works. Neither will the works cause disturbance to otter foraging activity, as otters are mainly nocturnal and construction activity will be during daylight hours.

15.113 Otter presence was recorded within the survey corridor at the Ceiriog overhead line crossing point, but no otter holts were identified. The construction of the overhead line will not adversely affect otters using the Ceiriog.

15.114 The habitat adjacent to the overhead line crossing points on the Dee and Ceiriog is not considered to have potential for otters to create holts or resting sites. However a repeat survey will be undertaken, as a precaution, no more than three months prior to works commencing. In the event that otter resting places are discovered that would be disturbed/destroyed by the construction works, new resting sites would be created in advance of the works in order to mitigate/compensate for this disturbance/loss. However due to the profile and open aspect of the banks at the crossing points it is not considered likely that such resting places will be identified by survey.

15.115 Although works should still proceed with caution in line with a best practice method statement, it is unlikely that it will be necessary to obtain a Natural England/Welsh Assembly Government (WAG) otter licence in order for the works to proceed within this receptor.

15.116 No modifications to bank or channel would be needed. The pole installation will not prevent natural fluvial processes. The area of temporary disturbance is much less than 0.1% of the SAC and there would be no direct impacts on riparian habitats, or the connectivity of these habitats. Provided that the construction method statements are adhered to, there should be **no significant effect** on this SAC/SSSI during the construction phase of the overhead line. There will also be **no significant effect** on this receptor resulting from the operation phase of the overhead line.

Nant-y-Belan and Prynela Woods SSSI (Wrexham)

15.117 The integrity of this SSSI depends upon the continued presence of, and lack of disturbance to, woodland canopy and ground flora.

15.118 This woodland SSSI designation extends for 35.5ha. The tolerance corridor for siting supports has been reduced to exclude the SSSI (as shown on Figure 15.8) and there are no pole positions within this receptor. The centreline of the optimised proposed route would be 14m outside the SSSI boundary at its closest point. The exact boundary of the designated site would be determined and demarcated to prevent inadvertent construction access. The construction phase of the overhead line will have **no significant effect** on the SSSI.

15.119 It may be necessary to undertake some limited management on the edge of the SSSI boundary during the operation of the overhead line if trees within the SSSI should grow tall enough to potentially affect safety clearances around the conductors. Ongoing management works during the operation of the line will be undertaken in line with best practice guidance. Such works will have no effect on the integrity of the SSSI, and the operational phase of the project will therefore have **no significant effect** upon this receptor.

Fernhill Pastures SSSI

15.120 The integrity of this SSSI depends upon the continued presence of and lack of disturbance to ground flora, the hydrological regime and the low-intensity management of the SSSI.

15.121 Fernhill Pastures SSSI extends for 11.8ha. The tolerance corridor does not cross this SSSI. At its nearest point, the optimised proposed route is 105m from the SSSI boundary. Any temporary access tracks and working areas that are needed will avoid the SSSI. The boundary of the designated site will be demarcated prior to construction works in the vicinity, and no access will be allowed within the SSSI. The construction phase of the overhead line will have **no effect** on the SSSI.

15.122 There will also be **no effect** on this receptor resulting from the operational phase of the overhead line.

Moor Wood County Wildlife Site

15.123 The integrity of Moor Wood depends on the continued presence of, and lack of disturbance to the ancient semi-natural woodland (ASNW) which is its core value. This in turn depends upon the presence of younger semi-natural woodland around the ASNW and the maintenance of favourable hydrological conditions, including streams which flow through the woodland.

15.124 Moor Wood has an area of 31ha. The tolerance corridor crosses Moor Wood County Wildlife Site at two separate locations. However both of these locations are thin extensions from the main body of the site; one being along a stream with a fringe of semi-natural broad-leaved woodland and one being along an overgrown, defunct native species-rich hedge. The former has been identified as a sensitive location (see Figure 15.7).

15.125 Where the optimised proposed route crosses the stream fringed with semi-natural broad-leaved woodland, no pole will be positioned within Moor Wood County Wildlife Site boundary. However it will be necessary to site a pole within the identified sensitive location.

15.126 Approximately 1000m^2 of woodland, the majority of which is within the County Wildlife Site boundary, will require either felling or reducing in height in order to clear the line of the conductors. However, this woodland is early mature or mature semi-natural broad-leaved woodland and is not ancient semi-natural woodland, which makes up the majority of Moor Wood. This loss of trees on the periphery of Moor Wood will have an effect on this receptor that is not significant.

15.127 Where the overhead line crosses the defunct native species-rich hedge, the hedge will require lowering and subsequent ongoing management for a stretch of approximately 20m in order to keep the line of the conductors clear. However, management of this hedge is likely to be beneficial to the hedge as it has become defunct and overgrown.

15.128 A pole will need to be positioned adjacent to the hedge crossing point; this will involve temporary disturbance to an area of up to 600m^2 of improved grassland outside Moor Wood during construction. The integrity of the hedge will be maintained. This activity will not have an effect on the integrity of Moor Wood.

15.129 No direct effects on the woodland soils, ground flora or hydrology would occur. Both the crossing points are on the periphery of Moor Wood, resulting in the potential loss of a small section of woodland, which will be maintained as a scrub layer, and the lowering of a hedge. However, these small scale works, affecting less than 0.1% of the area of the County Wildlife Site, will not affect any Ancient Semi-Natural Woodland and will have **no significant effect** on Moor Wood County Wildlife Site.

15.130 There will be **no effect** on Moor Wood resulting from the operational phase of the overhead line. There will be **no long-term effect** on this receptor.

Bramble Wood Ancient Semi-Natural Woodland

15.131 The ecological integrity of Bramble Wood depends on the continued presence of, and lack of disturbance to the Ancient Semi-Natural Woodland, which is its core value. This in turn depends upon the presence of younger plantation woodland around the Ancient Semi-Natural Woodland and the maintenance of favourable hydrological conditions.

15.132 Bramble Wood is made up of 3.93ha of Ancient Semi-Natural Woodland which has been supplemented by plantation woodland. It has been mapped as plantation broad-leaved woodland due to the prevalence of planted trees. Planted trees are more prevalent on the lower slopes (north-western edge of the wood), with the habitat becoming more typical of Ancient Semi-Natural Woodland on the higher ground (south-eastern edge of the wood).

15.133 Although the overhead line crosses the area known as Bramble Wood, identified as a sensitive location (see Figure 15.10), the proposed alignment passes through an existing gap in the wood created during a recent gas pipeline installation. This gap is approximately 30m wide and the pipeline easement is managed to prevent the re-growth of woodland.

15.134 No poles are to be positioned within Bramble Wood, although one pole will be positioned close to the south-eastern boundary, within an arable field. In view of the sensitivity of this location, for both ecological and archaeological reasons, the tolerance corridor through Bramble Wood will be reduced to 5 metres either side of the optimised proposed route.

15.135 There will be a permanent effect on approximately 500m^2 of mature plantation woodland and 300m^2 of early mature plantation woodland during the construction phase (some tree removal and some lopping). This will require ongoing maintenance in order to keep the conductors clear. A method statement will be produced, in line with best practice guidance, regarding these construction related works. Ongoing management works will be undertaken in accordance with best practice guidance.

15.136 Overall the construction phase of the overhead line will have a negative effect on Bramble Wood due to the loss of 800m^2 of mature and early mature plantation trees. There will be no direct effects on the Ancient Semi-Natural Woodland part of Bramble Wood, nor on ground flora or soils in the Ancient Semi-Natural Woodland. Construction works will therefore have **no significant effect** on this Ancient Semi-Natural Woodland resource.

15.137 Ongoing management of a small proportion of the woodland to ensure that safety clearances to conductors are maintained will have **no significant effect** on this woodland.

Arable field margins

15.138 The integrity of arable field margins as a collective resource of priority habitats depends upon continued management by farmers who plough but do not plant crops in these areas. Integrity also depends on birds being able to nest and forage in the field margins.

15.139 Where pole positions are close to field boundaries there is likely to be temporary disturbance to field margins within the working area during the construction process. Field margins may also be affected by access tracks during construction works.

15.140 Approximately 10% of field boundaries within the survey area can be classified as Arable Field Margin habitat type, the remaining field margins being grazed. The disturbance caused by construction will have a temporary negative effect on wildlife at a local scale and habitats will be reinstated once construction is complete. Only the small area occupied by the poles themselves will be permanently lost. This is not considered significant in the context of the extent of this habitat present within the area and the dispersed nature of the pole positions.

15.141 A suitable method statement will be developed, detailing best practice procedures for all construction and reinstatement works associated with arable field margins. Temporary access tracks will be clearly defined and the ground will be levelled once works are completed.

15.142 If works are to be undertaken between March and August inclusive, a ground nesting bird survey will be undertaken by an ecologist prior to works (see the 'farmland birds' receptor below for further details).

15.143 Up to 17 poles will be installed in arable field margins, although not all of these margins are managed strictly as priority habitats by their landowners. The construction phase of this development will have a negative effect on this receptor, but this is temporary and short term. Arable fields are subjected to regular disturbance due to ploughing. The disturbance to the arable field margins caused during construction works will therefore not be significantly different to the normal disturbance caused by regular farming practices. This disturbance will have **no significant residual effect** on the integrity of any arable field margin or on the collective value of margins as a habitat resource**.**

15.144 There will be **no effect** on this receptor resulting from the operational phase.

Hedgerows

15.145 The integrity of the hedgerows as a collective resource depends on maintenance of the overall length of hedgerows in the landscape, a lack of major gaps (10m+) within the hedges and the maintenance of linkages between hedges. This allows continued movement of flora and fauna.

15.146 The majority of field boundaries in the vicinity of the proposed route are delineated by hedgerows. The proposed route crosses 126 hedgerows.

15.147 Construction methods and detailed siting of poles will avoid compromising the integrity of field boundaries such as hedgerows or ditches where possible. In the event that a short section of hedgerow is removed for access, this section will either be removed between September and February or will be searched by an ecologist for nesting birds prior to removal. Such sections will normally be replanted with appropriate native, woody hedgerow species. In the event that permanent access is required by the landowner, the gap will be replaced by a gate of no more than 8m wide, with the hedge being replanted from either side. A gated access of this nature will not compromise the integrity of the hedgerow as a wildlife habitat.

15.148 The number of hedgerows affected by the construction phase is anticipated to be very low. These works will have **no significant effect** on this receptor, either in regard to individual hedgerows or to the hedgerow network as a whole.

Lowland fens

15.149 The integrity of fens depends on soils and underlying hydrology not being disturbed, coupled with avoidance of trampling or overgrazing pressures.

15.150 A series of traditionally managed fen-meadows are situated on gently sloping ground alongside the River Perry in north-west Shropshire, within Fernhill Pastures SSSI. Whilst there are no pole positions within the SSSI itself, one pole position is located on the edge of marshy grassland (typical fen habitat) approximately 105m from the SSSI.

15.151 There will be temporary disturbance to this habitat during construction due to clearance of the working area (600m^2). The access track will cross improved grassland and will not affect lowland fen habitat. Only the small area occupied by the pole itself will be permanently lost.

15.152 Suitable method statements will be developed, detailing best practice procedures for all construction and reinstatement works associated with this receptor.

15.153 If works are to be undertaken between March and August inclusive, a ground nesting bird survey will be undertaken by an ecologist prior to works (see the 'farmland birds' receptor below for further details).

15.154 The construction phase of this development will have a negative effect on this receptor, both temporary and (to a lesser extent) permanent. Neither the temporary loss of habitat for pole siting construction works, nor the permanent loss due to land-take for the pole itself, are considered significant in the context of the extent of this habitat present within the SSSI (which lies 105m away), and there will consequently be **no significant effect** on this receptor during the construction phase. There will be **no effect** resulting from the operational phase.

Lowland mixed deciduous woodland (and individual mature trees)

15.155 The integrity of lowland woodland depends upon retention of the overall extent of woodland canopy in the landscape, along with maintenance of continuous corridors of woodland and trees.

15.156 A total of 37 tree groups and 119 individual mature trees will potentially be affected by the construction phase of the overhead line. Trees which could potentially compromise the safety clearance of the conductors will require management, either by tree removal or lopping. The total area of this habitat type that will be affected is approximately 1.3ha. This effect will be dispersed along a corridor of over 20km in length, rather than being concentrated in one location.

15.157 In the **short to medium term**, construction of the line will have a **significant negative effect** on this priority habitat receptor. This receptor is widespread in the survey area so these losses are only **locally significant**. The number of trees to be felled will be less that the number potentially affected, as some trees will only require lopping to keep branches at safe distances from the overhead line.

15.158 Replacement planting of trees will be undertaken at a ratio of 2:1. It is highly likely, but not certain, that landowners will agree to such measures. Where landowners would prefer not to accept tree planting, SP Manweb would make a contribution to an appropriate local wildlife trust, for the purpose of offsetting tree losses with biodiversity benefits to the locality. The planting will be in locations that are appropriate to replace the losses, in the **medium to long term**, as the replacement trees mature, this compensation will reduce the effect on this receptor to a level at which there is **no significant residual effect** resulting from construction of the overhead line.

15.159 Ongoing management of trees remaining in proximity to the line will be required in order to ensure that safety clearances are maintained. These operational phase works will have **no significant effect** on this receptor.

Ponds

15.160 The integrity of ponds as an ecological resource is dependant on the management of the surrounding land. For ponds in an agricultural setting, provided that use of herbicides, pesticides and fertilisers on surrounding land is moderate they will continue to provide a valuable ecological niche for a wide range of flora and fauna. Ponds will undergo natural succession over time, changing in their suitability for specific flora and fauna and may eventually cease to exist due to siltation and invasion of scrub vegetation.

15.161 No ponds will be lost as a result of construction of the overhead line. There is the potential for disturbance to ponds during construction of the overhead line in the form of direct machine damage or runoff from access tracks and working areas. Where either pole position construction areas or access tracks are within 50m of a pond, detailed method statements will be provided in order to avoid negative effects on these receptors. These method statements will address the following issues:

- Water quality (sedimentation control)
- Track and drainage management
- Management of soil storage areas
- Water quality (oil, fuel and chemical contamination)

15.162 Ponds P10, P13 and P16 were found to contain great crested newt eggs. Great crested newts are considered as a separate receptor (see below).

15.163 Appropriate method statements will ensure that there is **no effect** on the integrity of ponds during the construction phase of the overhead line. The operation of the overhead line will have **no effect** on ponds. There will be **no residual effect** on this receptor.

Watercourses

15.164 The integrity of watercourse ecosystems depends on maintenance of high water quality and lack of disturbance to channel-beds, banks, riparian habitats and tributary streams. The availability of continuous bank woodland and grassland is also important for otters. Integrity also depends on natural fluvial processes being allowed to continue without excessive modification from engineering or other works on banks or in the floodplain.

15.165 There are potentially significant negative effects on the River Dee, River Ceiriog and Shropshire Union Canal that could arise from pollution incidents during construction

activities. Method statements will be prepared to address these risks, as outlined above (see River Dee SAC/SSSI). Construction activities on smaller watercourses such as the River Perry and the numerous streams and ditches should also be undertaken in line with these method statements, which will address the following issues:

- Water quality (sedimentation control)
- Track and drainage management
- Ditch/stream crossings
- Management of soil storage areas
- Water quality (oil, fuel and chemical contamination)

15.166 Where watercourses have been found to contain water voles or otters, the relevant construction method statement will be followed (see the 'water vole' and 'otter' receptors below for further details).

15.167 Provided that the construction method statements are adhered to, there should be **no effect** on the integrity of watercourses during the construction phase of the overhead line. There will be **no significant residual effect** on this receptor resulting from construction phase activities.

15.168 Watercourses, including canals, can provide bird flight routes through an area. Overhead lines crossing such routes could potentially result in bird injuries or fatalities. Post construction monitoring will be undertaken to assess this **potentially significant effect**. Retro-fitting of bird deflectors will be undertaken in the event that any significant effect on bird flight routes associated with watercourses is identified. This mitigation will result in **no significant residual effect** resulting from the operation phase of the overhead line.

Badger

15.169 For badger, the integrity of a population depends upon the presence of suitable terrestrial habitat for foraging, ranging and sheltering. The habitat between Legacy and Oswestry is very favourable for badgers, with extensive areas of open grassland and woodland.

15.170 There is the potential for badger setts to be disturbed or damaged and for badgers to be injured or killed during the construction phase of the overhead line.

15.171 Badgers are active along much of the survey corridor and a sett is present within 50m of the line at one point. Although there is no legal distance from a sett within which it is a requirement to obtain a licence to disturb badgers, it is likely that any construction works within 50m of a sett will require a licence from either Natural England or WAG (disturbance to a sett is only permitted from July-November inclusive).

15.172 As badgers are a dynamic species that will expand existing setts or create new ones each year, there is the potential for the baseline situation to change before construction works commence. A pre-construction survey will therefore be undertaken in order to minimise the risk of disturbance to resting sites of this species that are potentially present within the vicinity of the construction works. This survey will provide up to date information that can direct specific mitigation measures to avoid disturbance to badgers. Where disturbance is unavoidable, the survey results

will identify where it is necessary to apply for a badger licence from the appropriate authority.

15.173 Site specific method statements will be produced where potential effects on badgers will be identified. These method statements will be reviewed by the relevant statutory conservation organisation as part of the licensing process. Typical stipulations will be as follows:

- Where badgers are likely to be disturbed by machinery (particularly any digging operations), hand digging or tree/scrub clearance within 30m of a sett, a protection zone should be established around the sett, with boundaries demarcated by brightly coloured nylon rope or similar.
- Work (and the presence of vehicles) should be avoided within the protection zone between December and June when badgers are likely to be breeding and are susceptible to disturbance.
- Work (and the presence of vehicles) within the protection zone should be strictly controlled and supervised by an ecologist between January and November.
- If works require the partial closure or closure of a sett, the construction of artificial setts should be considered.

15.174 General measures to limit disturbance to this species will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later than one hour before dusk.

15.175 Although there is the potential for there to be a negative effect on this species through disturbance during the construction phase of the overhead line, this can be satisfactorily mitigated for. There will be **no significant residual effect** on the integrity of badger populations due to construction activities.

15.176 There will be **no effect** on this species during the operation phase.

Barn owl

15.177 The integrity of barn owl populations depends on lack of disturbance to nest and roost sites, and availability of large areas of foraging habitat. At least 40ha of grassland is needed to sustain a breeding pair, but more may be needed if grassland is sub-optimal for owl prey.

15.178 There are no buildings within the proposed route corridor to provide nesting or roosting sites for this species. However, barn owl may potentially roost or nest in holes in mature trees. Barn owls are a dynamic species and nest sites may vary from year to year. A pre-construction survey will therefore be undertaken in order to minimise the risk of disturbance to resting sites of this species that are potentially present within the vicinity of the construction works. This survey will provide up to date information that can direct specific mitigation measures to avoid or minimise disturbance to this species. Where disturbance is unavoidable, the survey results will identify where it is necessary to apply for a barn owl licence from the relevant statutory conservation organisation.

15.179 No work will be programmed between 1st March and 30th September (the nesting season) on trees identified by the pre-construction survey as having potential barn owl roosting or nesting sites. Where such sites are to be lost through tree removal or lopping, barn owl nest boxes will be erected, subject to landowner consent. All works potentially causing disturbance to barn owl will be supervised by an ecologist.

The design, siting and placement of the nest boxes will be determined by an ecologist, with consultation from the relevant statutory conservation organisation.

15.180 General measures to limit disturbance to this species will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later than one hour before dusk.

15.181 There is currently no evidence that this species will be affected during the construction phase of the overhead line. Following implementation of the above measures, there will be **no significant residual effect** on the integrity of barn owl populations resulting from construction activities. There will be **no effect** on this species during the operation phase.

Bats

15.182 The integrity of bat populations depends on presence of suitable roost sites (typically in buildings or mature trees), coupled with accessible and sheltered foraging areas for aerial capture of flying insect prey. Woodland edges, waterbodies and species-rich grassland are good foraging habitats. Bats also commute along hedgerows and belts of trees, so continuity of these features is important, particularly where near a roost.

15.183 No buildings are to be affected by the construction of the overhead line. However, a total of 10 tree groups and 72 individual mature trees with potential for use by roosting bats will potentially be affected by the construction and operation of the overhead line. Bats also use trees and woodlands to forage over, feeding on insects. Many bat species commute along linear features such as hedgerows and lines of trees.

15.184 Pre-construction ground based assessment and emergence bat surveys will be undertaken to identify whether bats are roosting in trees that are to be felled and to establish the extent to which bats use these habitat areas for foraging and commuting. The results of these surveys will determine whether a Natural England or WAG bat licence will be required to cover tree removal at specific locations. Where potential bat roost sites are to be lost, bat boxes will be erected subject to landowner consent.

15.185 Where lines of trees and tall hedgerows need to be lowered, hedgerows or corridors of scrub of at least 2m in height will be maintained or established in order to maintain potential bat commuting routes.

15.186 General measures to limit disturbance to this species will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later then one hour before dusk.

15.187 The inspection and mitigation scheme will ensure no net loss of roosts, either through avoidance or replacement. There will be no loss of commuting routes. There may be some loss of foraging associated with mature trees but the number of trees lost or reduced in size is a very small proportion (>0.0001%) of the overall woodland resource in the area (defined by a corridor of 1km width, which is less than the distance that bats can commute). Tree losses will be replaced (see lowland broad-leaved woodland receptor).

15.188 Although there is the potential for a negative effect on this species through disturbance during the construction phase of the overhead line, this can be

successfully mitigated for by adoption of the measures identified. There will be **no significant effect** on the integrity of bat populations during the construction phase.

15.189 **No effects** on bat species will arise from the operation of the overhead line.

Brown hare

15.190 The integrity of brown hare populations depends on the availability of a mosaic of arable fields, grassland and hedgerow habitats. Low intensity farming practices such as moderated use of herbicide and maintenance of arable field margins are important contributing factors to ensuring the integrity of brown hare populations is maintained.

15.191 Brown hare live exclusively above ground, utilising depressions in the ground, known as forms, to avoid predation. They are mainly nocturnal, foraging at dusk and dawn.

15.192 As brown hare territories generally consist of several hectares and as hares do not make permanent places of rest within these, the disturbance caused by the construction phase of the overhead line will have **no effect** on the integrity of this species. The operation phase of this development will also have **no effect** on this species.

15.193 General measures to limit disturbance to other species will also benefit brown hare.

Dormouse

15.194 The dormouse is a small, nocturnal, tree-living mammal. Dormice live at low population densities, requiring large areas of native woodland (>20ha) to maintain the integrity of populations, or smaller areas if these form part of a network that is linked by hedges or woodland strips, in order to sustain a viable population. Although no records for dormouse were identified in the desk-top survey, there is suitable woodland habitat within and adjacent to the proposed route corridor, with an extensive network of hedgerows, many of which are species-rich and would provide a diverse food source for dormice.

15.195 Pre-construction dormouse surveys will be undertaken to identify whether dormice are present in tree groups that are to be felled. The results of these surveys will determine whether a Natural England or WAG dormouse licence will be required to cover tree removal at specific locations. Where lines of trees and tall hedgerows need to be lowered, hedgerows or corridors of scrub of at least 2m in height will be maintained or established in order to maintain the connectivity of woodland/hedge habitats. Where potential dormouse nest sites are to be lost, dormouse boxes will be provided, subject to landowner consent. The design, siting and placement of the nest boxes will be determined by an ecologist, with consultation from the relevant statutory conservation organisation.

15.196 The areas of woodland being cleared for the overhead line route are generally smaller than the size of a home range of a single dormouse (1 to 1.5ha), with the result than such effects will not significantly affect any dormouse population present, provided that connectivity of habitat is maintained post construction.

15.197 Where dormice are identified, site specific method statements will be produced detailing best practice measures to limit disturbance to this species and these will be subject to approval under licence by Natural England or the Welsh Assembly Government.

15.198 General measures to limit disturbance to this species will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later then one hour before dusk.

15.199 Although there is the potential for there to be a negative effect on this species through disturbance during the construction phase of the overhead line, this can be successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** on the integrity of dormouse populations as a result of construction activities.

15.200 There will be **no effect** on this species during the operation phase.

Farmland birds

15.201 The integrity of farmland bird populations depends largely on the manner in which land is farmed. Agricultural practices such as retention of arable field margins, spring-sowing, low-intensity grazing, wetland, hedgerow and woodland planting can all influence the diversity and density of bird species on farmland. Integrity also depends on lack of disturbance to birds at the nest.

15.202 There is the potential for construction activities to have a negative effect on farmland birds during the breeding season through the disturbance and destruction of habitat. Most birds are legally protected against disturbance while nesting.

15.203 Tree removal and the reduction in the height of hedges will either take place outside of the breeding bird season (March to August) or will be preceded by an inspection by an ecologist not more than one day prior to works. If nesting birds are identified, an area of at least 20m diameter will be left undisturbed until the young and adults have left the nest.

15.204 Much of the proposed route crosses improved or semi-improved grassland which is used for grazing livestock and is not favoured by ground-nesting birds. Areas of rough grassland, scrub or areas used for cereal crops may be used for nesting by species such as lapwing, skylark and grey partridge. If works are to be undertaken to these areas between March and August, works areas and access tracks will be checked for ground nesting birds by an ecologist not more than one day prior to commencement of works. If nesting birds are identified, an area of at least 20m diameter will be left undisturbed until the young and adults have left the nest.

15.205 General measures to limit disturbance to farmland birds will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later than one hour before dusk.

15.206 There will be no effect on birds while at the nest. Losses of land for ground-nesting birds will be limited to the pole positions, which is negligible in area. Losses of, and reductions to height of, mature trees will be a very small proportion (>0.001%) of the overall woodland resource in the area (defined in terms of the tolerance corridor). Trees losses will be replaced (see lowland broad-leaved woodland receptor). Therefore there will be **no significant residual effect** on the integrity of farmland bird populations as a result of the construction phase.

15.207 The wooden poles of the overhead line may provide additional perching positions for predatory birds. However, it is not considered likely that this will lead to a significant effect on other species of birds that are the prey of these species as there are

already abundant trees within the landscape that provide perching positions for predatory birds. There will therefore be **no effect** on the integrity of farmland bird populations as a result of the operation phase of the overhead line.

Great crested newt

15.208 For great crested newts, the integrity of a population depends upon the presence of suitable ponds (breeding habitat) and access from the ponds to surrounding terrestrial habitat for foraging and sheltering.

15.209 No ponds will be directly affected by the construction or operation of the proposed overhead line. There will therefore be no effects upon the aquatic phase of this receptor. There is potential for newts to be affected in areas of suitable terrestrial habitat surrounding great crested newt ponds. Great crested newt eggs were identified in Ponds P10, P13 and P16 within the amphibian survey corridor and also in Pond SAC1, where the proposed route corridor lies between this pond and Johnstown Newt Sites SAC.

15.210 Where the great crested newt HSI result for a pond has been recorded as 'average', 'good' or 'excellent', pre-construction full pond surveys as per English Nature guidelines (2001) will be undertaken in the year prior to works to support WAG/Natural England licence applications as appropriate.

15.211 There is the potential for great crested newts to be injured or killed during construction activities. WAG/Natural England great crested newt licences may be required so that appropriate mitigation measures can be employed to minimise potential effects on this receptor. These licences will cover construction works in terrestrial amphibian habitat areas associated with the identified great crested newt ponds and suitable terrestrial amphibian habitat that lies between Johnstown Newt Sites SAC and Pond SAC1. The potential for disturbance of terrestrial habitat due to overhead line construction is not significant in the context of the overall landscape available to newts, as judged by reference to aerial photography and phase 1 habitat survey.

15.212 Mitigation will take the form of vegetation strimming and hand searching prior to works. Any identified great crested newts will be moved to suitable adjacent habitat that is not to be affected by the works. The period of disturbance to terrestrial habitats (maximum of four weeks) is not significant in the context of the expected newt lifespan (8+ years) and newt access to ponds will not be restricted. Additional aquatic habitat in the form of a shallow scrape or scrapes will be created within the Johnstown Newt Sites SAC.

15.213 Full pond surveys as per English Nature guidelines (2001) will be undertaken in the year prior to works in order to provide data to support applications for WAG/Natural England great crested newt licences. Ponds subjected to these surveys will be:

- P10, P13, P16 and ponds within the amphibian survey corridor that are within 250m of these ponds (and could hence potentially contain great crested newts that are part of the same population, as described in the Great Crested Newt Mitigation Guidelines (English Nature, 2001), namely P9, P11, P12, P14, P15, P17 and P18.

- SAC1-SAC5 and P49 (which lie within 500m of Johnstown Newt Sites SAC)

- Ponds with a HSI score of 'average', 'good' or 'excellent' not already identified above, namely P1, P2, P3, P7, P8, P19, P20, P21, P25, P28, P36, P47, P48, P52, P54, P55, P56, P57, P58, P59 and P61.

15.214 Ponds within 150m of the underground cable sections of the route at the approaches to Legacy and Oswestry substations will firstly be subjected to an egg search survey and HSI assessment. Of the ponds within this 300m wide corridor, those found to contain great crested newt eggs, those within 250m of these ponds and those with HSI scores of 'average', 'good' or 'excellent' will be subject to full pond surveys as per English Nature guidelines (2001) in the year prior to works in order to provide data to support applications for WAG/Natural England great crested newt licences.

15.215 Although there is the potential for a negative effect on individual great crested newts during the construction phase, this can be successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** upon the integrity of great crested newt populations as a result of construction activities.

15.216 There will be **no effect** on this receptor during the operation of the overhead line.

Otter

15.217 The integrity of otter populations depends on easy access to watercourses of high water quality and fish numbers, together with the presence of sheltered and undisturbed breeding and resting places, typically on river banks. Otters range widely, so presence of continuous corridors of undisturbed habitat is important.

15.218 There is potential for otter to be disturbed, injured or killed and for otter habitat to be damaged during the construction phase of the overhead line.

15.219 A pre-construction otter survey will be conducted at the crossing points of the overhead line route on the rivers Dee, Ceiriog and Perry to confirm the locations of resting places for this species. If active otter resting places are identified within 50m of these crossing points then a Natural England or WAG otter licence will be required for the works to proceed.

15.220 Specific method statements will be provided for each crossing point in order to minimise the effect of construction works on otters. This will generally involve proceeding with caution under the supervision of an ecologist. If significant disturbance is likely to occur within 50m of an active holt then it may be necessary to create a new holt nearby under licence. If temporary resting places are identified within 50m of the works, replacement temporary resting places will be created nearby under licence.

15.221 General measures to limit disturbance to otters will include avoiding the use of artificial lighting, commencing work no earlier than one hour after sunrise and finishing no later than one hour before dusk.

15.222 The scheme will not result in any direct effects on watercourses or banks. Pollution control measures will ensure that there will be no indirect effects on otters as a result of construction activities. On the basis of current survey information, no otter breeding or resting places will be affected. There will be no effect on continuity of riparian habitat.

15.223 Although there is the potential for there to be a negative effect on this species through disturbance during the construction phase of the overhead line, this can be

successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** on the integrity of otter populations during the construction phase.

15.224 There will be **no effect** on this species during the operation phase.

Water voles

15.225 The integrity of water vole populations depends on bank habitat and water quality, the absence of aggressive predators such as mink, and the absence of disturbance to bank habitats from engineering works or overgrazing, and the absence of deep shade from woodland canopy. Voles spend the great majority of their lives within 5m of a watercourse, so works outside this riparian strip are unlikely to have a significant effect on vole integrity.

15.226 There is potential for water vole burrows to be disturbed or damaged and for water voles to be injured or killed due to construction activities adjacent to watercourses.

15.227 Voles are mobile and populations fluctuate from year-to-year. The scheme will require up to 7 poles to be installed within 5m of a watercourse bank. Pre-construction water vole surveys will be conducted between March and October on watercourses where a pole position is to be located within 5m of the top of a bank. Where water voles are identified as being present, works will follow a best practice water vole mitigation method statement. This method statement will require the use of passive dispersal by vegetation removal to be employed prior to the commencement of works. Method statements will be agreed with Natural England or CCW as appropriate.

15.228 Passive dispersal is most effective in early April when water voles have come out of hibernation but have yet to establish firm territories or produce young. Attempts to disperse water voles will not be employed between September and March inclusive. Works to areas within 5m of the top of a watercourse bank will not be undertaken between September and March inclusive. Where works affecting areas within 5m of the top of a watercourse bank cannot be completed immediately after passive dispersal measures in early April, the area must be maintained with minimal vegetation from early April until such time as works are completed, which will be no later than August of the same year.

15.229 As only short sections of bank will need to be cleared of water voles temporarily at any one location, it will not be necessary to create new water vole habitat in advance of the use of passive dispersal methods. The extent of temporary bank disturbance (approximately 50m stretches at up to 7 locations) within an overall resource of many kilometres watercourse bank will not have a significant effect on the integrity of water vole populations.

15.230 Although there is the potential for there to be a negative effect on this species through disturbance during the construction phase of the overhead line, this can be successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** on the integrity of water vole populations during the construction phase.

15.231 There will be **no effect** on this species during the operation phase.

Underground cable sections

Approach to Legacy substation

15.232 An ecological walkover assessment of the route of the underground cable section at the approach to the substation at Legacy was undertaken in March 2009.

15.233 The underground cable section at the approach to the substation at Legacy will be laid in the roadway. This will require the digging of a trench of approximately 1m wide and 1m deep, laying of cables, back filling the trench and resurfacing the road.

15.234 These works will be undertaken within 150m of a pond for which desktop records of great crested newt have been obtained. For great crested newts, the integrity of a population depends upon the presence of suitable ponds (breeding habitat) and access from the ponds to surrounding terrestrial habitat for foraging and sheltering.

15.235 There is the potential for great crested newts to be injured or killed during construction activities. A WAG great crested newt licence will be required so that appropriate mitigation measures can be employed to minimise potential effects on this receptor.

15.236 Works will ideally be conducted such that no section of trench is left open overnight and no earth is left stockpiled overnight. In the event that it is necessary to leave a section of trench open overnight, an ecologist will inspect the open trench for great crested newt and other amphibians in the morning prior to commencement of works. Any identified great crested newts or other amphibians identified in the trench will be moved to suitable nearby habitat that is unaffected by the works. Where soil is to be stockpiled overnight it will be necessary to surround the stockpile with amphibian fencing suitable for use under a WAG great crested newt licence.

15.237 Although there is the potential for a negative effect on individual great crested newts during the construction phase, this can be successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** upon the integrity of great crested newt populations as a result of construction activities. There will be **no effect** on this receptor during the operation of the underground cable.

15.238 There are no other potential receptors associated with the underground cable works at the approach to Legacy substation.

Approach to Oswestry substation

15.239 An ecological walkover assessment of the route of the underground cable section at the approach to the substation at Oswestry was undertaken in March 2009.

15.240 The route will cross the A5 as underground cable, and the cable will then follow a route parallel to the road, on its west side, into Oswestry substation. This will require the digging of a trench of approximately 1m wide and 1m deep, laying of cables and back filling the trench.

15.241 Habitats that will potentially be affected by the works include mestrophic grassland, tall ruderal herb, dense scrub, scattered scrub, young mixed plantation woodland and native species-poor hedge. Disturbance caused by the works will be short-term and temporary and will not affect the integrity of these features.

15.242 Assuming a worst-case scenario that the route would be laid in vegetated land (rather than roadways), and the width of the trench and working area would be 5m average; there would be temporary disturbance of approximately 0.7ha of vegetation. The native species-poor hedge running parallel to the A5 would be the only habitat present that is one of the identified ecological receptors, and this habitat would potentially be crossed four times by the underground cable, with a maximum length of 5m ($10m^2$) being affected at each crossing point. These sections will either be removed between September and February or will be searched by an ecologist for nesting birds prior to removal. Such sections will be replanted with appropriate native, woody hedgerow species. The assessment of effects on this receptor remains as previously described.

15.243 There are no trees with potential to support roosting bats that will be affected by the construction or operation of the underground cable section at the approach to Oswestry substation.

15.244 These works will be undertaken within 150m of a pond for which desk-top records of great crested newt have been obtained. There is the potential for great crested newts to be injured or killed during construction activities. A Natural England great crested newt licence will be required so that appropriate mitigation measures can be employed to minimise potential effects on this receptor.

15.245 Works will ideally be conducted such that no section of trench is left open overnight and no earth is left stockpiled overnight. In the event that it is necessary to leave a section of trench open overnight, an ecologist will inspect the open trench for great crested newt and other amphibians in the morning prior to commencement of works. Any identified great crested newts or other amphibians identified in the trench will be moved to suitable nearby habitat that is unaffected by the works. Where soil is to be stockpiled overnight it will be necessary to surround the stockpile with amphibian fencing suitable for use under a Natural England great crested newt licence.

15.246 Although there is the potential for a negative effect on individual great crested newts during the construction phase, this can be successfully mitigated for by the adoption of the measures identified. There will be **no significant residual effect** upon the integrity of great crested newt populations as a result of construction activities.

15.247 There are no other potential receptors associated with the underground cable works at the approach to Oswestry substation.

Summary of effects

15.248 Table 15.7 summarises the receptor, character of potentially significant effect, the avoidance, mitigation and compensation measures proposed and the significance of the residual effect.

Conclusions

15.249 The following conclusions are based on the assessment of the likely effects of the proposed development on ecological interests, taking into account avoidance, mitigation and compensation measures.

15.250 Twenty-one ecological receptors have been assessed, with nature conservation values ranging from international to immediate zone of influence.

15.251 The overhead line will have a **significant negative effect**, in the **short to medium term**, on one receptor, the priority habitat Lowland Mixed Deciduous Woodland (and individual mature trees). This effect is significant at only a **Local** level, due to the abundance of this receptor in Shropshire and Wrexham.

15.252 To compensate for this effect, replacement planting of trees will be undertaken at a ratio of 2:1. Planting will be in locations that are appropriate to replace the losses, subject to landowner agreement. In the **medium to long term**, as the replacement trees mature, this compensation will reduce the effect on this receptor to a level at which there is **no significant residual effect** resulting from construction of the overhead line.

15.253 The overhead line will have **no significant residual effect** on the following receptors:

- Johnstown Newt Sites SAC / Stryt Las A'r Hafod SSSI
- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee / Afon Dyfrdwy SSSI
- Nant-y-Belan and Prynela Woods SSSI (Wrexham)
- Moor Wood County Wildlife Site
- Bramble Wood Ancient Semi-Natural Woodland (ASNW)
- Arable Field Margins
- Hedgerows
- Lowland Fens
- Ponds
- Watercourses
- Badger
- Bats
- Dormouse
- Farmland Birds
- Great crested newt
- Otter
- Water vole

15.254 The overhead line will have **no effect** upon the following receptors:

- Fernhill Pastures SSSI
- Barn owl
- Brown hare

15.255 With regard to the underground cable sections of the proposed route, although these are not subject to S37 consent requirements, measures will be adopted to ensure that construction works will minimise any potential effects on habitats and species of conservation concern. These underground cable works will have **no significant residual effect** on any ecological receptor.

Table 15.7: Summary of Receptor, Potential Effects, Avoidance, Mitigation and Compensation Measures and Significance of Residual Effect

Receptor	Potential Effect	Avoidance and Mitigation	Compensation	Significance of Residual Effect
Johnstown Newt Sites SAC / Stryt Las A'r Hafod SSSI	**Negative (International):** Potential for great crested newts to be killed/injured during temporary disturbance to working area.	Best practice mitigation method statements under WAG licences, to include vegetation strimming and hand searching. Great crested newts will be relocated to adjacent habitat unaffected by works.	None	**Not Significant**
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC & River Dee / Afon Dyfrdwy SSSI	**Negative (International):** Loss of up to 1630m^2 lowland mixed deciduous woodland **Negative (International):** Pollution of rivers during construction	Best practice method statement Best practice construction method statements (various)	None None	**Not Significant**
Nant-y-Belan and Prynela Woods SSSI (Wrexham)	**No Effect**	Avoided through route design; boundary demarcated to prevent inadvertent access	n/a	No Effect
Fernhill Pastures SSSI	**No effect**	Avoided through route design; boundary demarcated to prevent inadvertent access	n/a	No Effect
Moor Wood County Wildlife Site	**Negative (County):** Loss of up to 1000m^2 of early mature/mature broad-leaf woodland	Best practice method statement. Establishment of scrub layer in place of lost woodland to maintain connectivity of habitat.	None	**Not Significant**
Bramble Wood Ancient Semi-Natural Woodland (ASNW)	**Negative (County):** Loss of up to 800 m^2 of early mature/mature broad-leaf plantation woodland	Best practice method statement. Minimised effect through utilising existing wayleave corridor through ASNW	None	**Not Significant**
Arable Field Margins	**Negative (Local):** Temporary disturbance to circa 15 arable field margins due to working areas/access tracks	Temporary access tracks will be clearly defined and the ground will be levelled once works are completed.	None	**Not Significant**

Receptor	Potential Effect	Avoidance and Mitigation	Compensation	Significance of Residual Effect
Hedgerows	**Negative (Local):** Potential damage to integrity of up to 126 hedgerows crossed by overhead line	Avoided where possible through detailed siting of pole positions.	Replanting of any sections removed for accessusing native, woody hedgerow species	**Not Significant**
Lowland Fens	**Negative (County/National):** Temporary disturbance due to one working area and associated access track within this habitat	Best practice method statements for construction/ reinstatement works	None	**Not Significant**
Lowland Mixed Deciduous Woodland (and individual mature trees)	**Negative (Local):** Loss of a total of 1.3ha of this habitat, plus the loss of 119 individual mature trees	Effects on woodland minimised through route design, avoiding main woodland areas. Establishment of scrub layers in place of lost woodland where it is important to maintain connectivity of habitat.	Replacement planting of trees at ratio of 2:1. Replacement planting will be in locations appropriate to replace loss where landowners agree. Where landowners would prefer not to accept tree planting, SP Manweb would make a contribution to an appropriate local wildlife trust.	**Significant (short to medium term), reducing to Not Significant (medium to long term)**
Ponds	**Negative (Local):** Disturbance due to machine damage or runoff from working areas/access tracks	Avoidance during route design. Best practice method statements for water quality (various)	None	**Not Significant**
Watercourses	**Negative (International-Local):** Pollution of rivers during construction	Best practice method statements for water quality (various). Post construction monitoring of bird deaths, potentially leading to retro-fitting of bird deflectors.	None	**Not Significant**

Receptor	Potential Effect	Avoidance and Mitigation	Compensation	Significance of Residual Effect
Badger	**Negative (Immediate zone of influence):** Potential for badgers to be killed/injured and for disturbance to/loss of sett/s during construction works	Best practice mitigation method statement/s under Natural England/WAG licence/s (30m protection zone established around setts. Disturbance only permitted July-November inclusive. Creation of artificial setts to be considered where closure/partial closure of sett is required)	Various (dependent on specific effect but sufficient to ensure no residual effect)	**Not Significant**
Barn owl	**No effect**	Pre-construction survey. No work will be programmed between 1st March and 30th September (the nesting season) on trees identified as having potential barn owl roosting or nesting sites	Barn owl nest boxes to be provided (subject to landowner consent) if potential loss of roost sites identified.	No effect
Bats	**Negative (Immediate zone of influence):** Loss of up to 1.3ha of lowland mixed deciduous woodland and 72 individual mature trees with bat roost potential	Best practice mitigation method statement/s under Natural England/WAG licence/s. Maintenance/creation of hedgerows/ scrub layers to maintain bat commuting corridors	New bat boxes provided (subject to landowner consent) in sufficient quantity to compensate for lost potential roost sites.	**Not Significant**
Brown Hare	**No effect**	None	n/a	No Effect
Dormouse	**Negative (Immediate zone of influence):** Disturbance to/loss of habitat during construction works	Best practice mitigation method statement/s under Natural England/WAG licence/s. Maintenance/creation of hedgerows/ scrub layers to maintain habitat connectivity.	New dormouse nest boxes provided where dormouse populations are identified (subject to landowner consent), in sufficient quantity to compensate for lost potential nest sites.	**Not Significant**

Receptor	Potential Effect	Avoidance and Mitigation	Compensation	Significance of Residual Effect
Farmland Birds	**Negative (District):** Disturbance to nesting birds and loss of habitat.	Works affecting potential bird nesting habitat either avoid breeding bird season (March-August) or habitat is subject to search by ecologist prior to commencement of works. If nesting birds identified, an area of at least 20m diameter to be left undisturbed until the young and adults have left the nest. Method statement required for construction works in March to August inclusive.	None	**Not Significant**
Great crested newt	**Negative (District):** Potential for great crested newts to be killed/injured during temporary disturbance to working area.	Best practice mitigation method statements under Natural England/ WAG licences, to include vegetation strimming and hand searching. Great crested newts will be relocated to adjacent habitat unaffected by works.Trenches/holes left open overnight will be inspected by an ecologist in the morning prior to works. Stockpiled earth will be surrounded by amphibian fencing.	New aquatic habitat in the form of a shallow scrape or scrapes will be created within Johnstown Newt Sites SAC.	**Not Significant**
Otter	**Negative (County):** Potential for otters to be killed/injured and for disturbance to/loss of holts/resting places during construction works	Best practice mitigation method statement/s, potentially under Natural England/WAG licence/s. Where works are to take place within 50m of a holt or resting place, it may be necessary to create new holts or resting places.	None	**Not Significant**

Receptor	Potential Effect	Avoidance and Mitigation	Compensation	Significance of Residual Effect
Water vole	**Negative (District):** Potential for water voles to be killed/injured and for disturbance to/loss of burrows during construction works	Best practice mitigation method statement (passive dispersal methods most effective April, can only move voles April-August). Works affecting areas within 5m of top of a watercourse bank that are not completed immediately after passive dispersal measures in early April will be maintained with minimal vegetation until such time as works are completed, which will be no later than August of the same year.	None	**Not Significant**

16.0 EFFECTS ON ARCHAEOLOGY AND CULTURAL HERITAGE

Introduction

16.1 This chapter provides and assessment of the likely significant effects of the proposed 132kV reinforcement on archaeology and cultural heritage.

16.2 Statutory context of the heritage resource is outlined. This is followed by details of the method used in assessment of effects, a baseline review of cultural heritage features and an assessment of how the resource will be affected. The chapter concludes with mitigation proposals and the probable residual effects of the scheme with mitigation in place.

Context

16.3 Today's urban and rural landscape is the product of human activity over thousands of years. There are settlements and remains of every period, from the camps of the early hunter-gatherers to remains of 20th Century industrial and military activities. They include places of worship, settlements, defences, burial grounds, farms, fields and sites of industry, in some cases forming broader archaeological landscapes.

16.4 The study area has a wide and varied archaeological and built heritage. These archaeological and historic features contribute to the social and economic prosperity of the community, as they comprise important tourist attractions and education initiatives.

16.5 Sites of archaeological and cultural importance are a finite and non-renewable resource and should therefore be protected and managed. PPGs 15 and 16 set out the government's planning policy on how archaeological remains and discoveries and built heritage should be handled in the context of the development plan and development control systems. Welsh Office Circulars 60/96 and 61/96 detail how PPG 15 and PPG 16 should be applied in Wales. This is further addressed in A Guide to Planning Policy in Wales, Chapter 6: Conserving the Historic Environment (National Assembly for Wales 2002)

16.6 Statutory protection of the heritage resource is afforded through Scheduled Monument, Conservation Area and Listed Building status. Further non-statutory designations of national importance include Parks and Gardens registered by English Heritage and Cadw. Further archaeological sites may also have the potential to fulfil the scheduling criteria of English Heritage/Cadw but have no formal protection.

16.7 Legislation affords protection to both the cultural heritage feature and its setting, although the term 'setting' is not defined. For the purpose of this assessment, setting relates to how the physical surroundings of an historic asset contribute to its appreciation and understanding. Visual perception of the surroundings of an historic place is almost always the dominant consideration, but non-visual perceptions can be relevant in how the setting is perceived. Historical relationships and context are fundamental to an appreciation of setting. Public access and amenity are not essential attributes of setting, but may add to its sensitivity. Views from accessible places are generally regarded as very relevant, as is the fact that the site may be heavily visited, or may be a well recognised landmark.

16.8 Scheduled Monuments, Listed Buildings and Conservation Areas should not be seen in isolation. They are part of an overall heritage resource that includes their inter-relationship to each other and to the wider heritage resource including ancient

woodland, areas of landscape character and historic landscapes.

16.9 Prior to the definition of the proposed route, a scoping report and consultation document were produced. For these documents, Scheduled Monuments, Listed Buildings, Conservation Areas and Parks and Gardens on the English Heritage/Cadw Registers have been mapped, together with areas identified on the Register of Landscapes of Special Historic Interest in Wales, produced by Cadw.

16.10 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. Section 1 discusses the cultural heritage resource within this broad area. This initial routeing study identified a preferred route, comprising an 80 m-wide corridor within which the overhead line will be placed. The Study Area surveyed for environmental impact assessment purposes, discussed in Sections 2 – 6, comprises a 1 km corridor centred on the 80m corridor.

Scheduled Monuments

16.11 Scheduled Monuments are designated under the Ancient Monuments and Archaeological Areas Act, 1979. They are defined in PPG16 as archaeological sites of national importance. Scheduled Monument Consent is required from the Secretary of State for any development affecting such a monument.

16.12 There are numerous Scheduled Monuments within the study area. The majority of these are fragmented and small in area and will therefore be considered as route deviation issues. At the strategic level, only the larger scheduled monuments, or groups of monuments, have been considered:

- Offa's Dyke
- Wat's Dyke
- Old Oswestry Hill Fort
- Rhyn Park Roman Military site.
- Whittington Castle

Offa's Dyke

16.13 Offa's Dyke is a linear earthwork, believed to date from the 8th century, which roughly follows the Welsh/English border. It consists of a ditch and rampart constructed with the ditch on the Welsh-facing side. Much of the dyke is still traceable along the 80 miles from the Wye valley to Wrexham. It follows an approximately north-south alignment in the western part of the study area. The route of Offa's Dyke Path, a National Trail, does not follow the earthwork precisely within this area.

Wat's Dyke

16.14 This is a similarly constructed earthwork, and is scheduled along much of its 49 mile length. Wat's Dyke is likely to date from the Anglo-Saxon period, perhaps built earlier than Offa's Dyke. From Mold to Oswestry the two earthworks are almost parallel, with Offa's Dyke to the west and on higher ground.

Old Oswestry Hill Fort

16.15 Old Oswestry Hill Fort is a large Iron Age fort with a series of five ramparts and an elaborate, heavily defended western entrance. It forms a prominent feature in the

landscape.

Rhyn Park Roman Military site

16.16 The site is thought to have been a Roman fortress, possibly a campaign base of legionary size. There is evidence of a large fort, area estimated 19.57 hectares, dating from mid 1st century, overlain with a smaller, later fort (area 5.86 ha) on the east side. Within the later Roman Fort is the cropmark of a small native style farmstead lying close to the hamlet of Rhyn and probably post-dating the military phase. Evidence of the military site is primarily through aerial photography; it is not readily discernible from the surrounding area.

Whittington Castle

16.17 This castle is one of the few remaining Marcher Castles largely intact. Initially a medieval motte and bailey castle, it was altered in the thirteenth century with the construction of a stone keep, walls, towers and a gatehouse. The castle is surrounded by a ring of defensive earthworks. Following decay and the reuse of stone, the principal building is the gatehouse and an attached 17th Century cottage. The castle is both a Scheduled Monument and Grade I listed building, and lies within Whittington Village Conservation Area.

Listed buildings

16.18 The term building is defined broadly and can include walls, bridges and other structures. Buildings of special architectural or historic interest are protected under the Planning (Listed Buildings and Conservation Areas) Act 1990 and are divided into three categories, Grade I, II* and II. In determining an application for development affecting a listed building or its setting, the planning authority is required to have special regard to the desirability of preserving the building or its setting, or any features of special architectural or historic interest which it possesses. Listed buildings are scattered throughout the study area. As they are small in area they are treated as route deviation issues rather than routeing considerations.

16.19 It should be noted that although Listed Buildings are in themselves generally small in scale, their wider settings are often more extensive.

Conservation Areas

16.20 Conservation Areas including their setting are protected by statute under the Planning (Listed Buildings and Conservation Areas) Act 1990. There are no conservation areas affected by the proposed development as they are contained within settlement boundaries which have been generally avoided. In addition to five Conservation Areas within the urban fabric of Wrexham, the following Conservation Areas are located within the study area:

- Bersham
- Marchwiel
- Penycae
- Cefn Mawr
- Ruabon
- Pontcysyllte
- Overton
- Erbistock
- Chirk

- Whittington
- Oswestry.

Historic parks and gardens

16.21 Registers of historic parks and gardens are compiled and maintained by English Heritage (Register of Historic Parks and Gardens) and Cadw/CCW/ICOMOS (Register of Landscaped Parks and Gardens of Special Historic Interest in Wales). These areas are not statutorily protected, although the effect of proposed development on an historic garden or designed landscape is a material consideration in the planning system.

16.22 There are eleven Registered Historic Parks and Gardens located within the study area:

- Erddig, Clwyd (grade I)
- Wynnstay, Clwyd (grade I)
- Chirk Castle, Clwyd (grade I)
- Whitehurst, Clwyd (grade II*)
- Brynkinalt, Clwyd and Shropshire (grade II*)
- Trevor Hall, Clwyd (grade II*)
- Brogyntyn Hall, Shropshire (grade II)
- Erbistock Hall, Clwyd (grade II)
- Rosehill, Clwyd (grade II)
- Pen-y-lan, Clwyd (grade II)
- Argoed Hall, Clwyd (grade II)

Landscapes of Historic Interest (Wales only)

16.23 The *Register of Landscapes of Historic Interest in Wales* is being compiled by Cadw, Welsh Historic Monuments, the Countryside Council for Wales and the International Council on Monuments and Sites. There are currently two parts to the Register, Part 1 being the Register of Landscapes of Outstanding Historic Interest in Wales and Part 2 encompassing landscapes of Special Historic Interest. The first part of this, covering thirty-six 'outstanding' landscapes, was first published in 1998, the second part in 2001. Although non-statutory, it provides a national overview of the historic content of the Welsh landscape.

16.24 There are two identified Landscapes of Special Historic Interest on the western and eastern fringes of the study area. These are:

- Vale of Llangollen and Eglwyseg Mountain; and
- Maelor Saesneg.

16.25 The Vale of Llangollen is described in the citation as presenting 'a remarkable visual combination of stark natural landforms and ancient and modern man-made features'.

16.26 Maelor Saesneg is described as uncharacteristic of Wales, with a historic character more typical of the English border than of Wales. Historically, the majority of Maelor Saesneg would have been subject to similar land use patterns, with a predominantly pastoral economy. The integrity of the historic landscape is best preserved in the western part of the area. In Welsh terms, the scale and survival of this remarkable medieval field and cultivation pattern make this 'a very rare and valuable landscape' (extract from Wrexham LANDMAP June 2004).

16.27 There is no equivalent register of historic landscapes in England. The process of 'historic landscape characterisation', which will ultimately provide more detailed information about the character of the landscape and inform the way in which aspects of the historic landscape may be managed, is underway in both England and Wales.

Historic hedgerows

16.28 Hedgerows are common features of the landscape of the study area. The Hedgerows Regulations 1997 (DoE; and new guidance 2002) make provision for the protection of hedgerows considered to be of landscape and/or historical and natural history importance. The Regulations state that a hedgerow can be considered to be 'important' if it meets the following criteria:

- Marks a pre-1850 parish or township boundary;
- Incorporates an archaeological feature;
- Is part of, or associated with, an archaeological site;
- Marks the boundary of, or is associated with pre-1600 estate or manor;
- Forms an integral part of a field system pre-dating the Enclosure Act (1845).

Method

16.29 Oxford Archaeology (OA) has carried out a programme of archaeological desk-based assessment (DBA) and field assessment of the archaeological and cultural heritage resource of the proposed overhead line route. Initial assessment (OA 2007a), carried out during April 2007, was of the full length of a route from Legacy to Oswestry, passing to the west of the village of St Martin's. Subsequently further assessment (OA 2007b) was carried out during July 2007 of an alternative line for the central part of the route, passing to the east of St Martin's. The current EIA was prepared in relation to a proposed route formed from a combination of the two surveyed routes.

16.30 Minor changes were made to the route alignment during 2008. These entailed a minor change of alignment between the Dee and Ceiriog rivers, and minor realignments south-east of St Martin's village, and west of the Fernhill area. The realignments were subject to field survey as necessary and the results are included within this EIA. The proposed route alignment is shown on the detailed plans accompanying this chapter (Figures 16.1 - 16.19).

16.31 The original desk-based assessments are presented as Appendices 16A and 16B of this environmental statement. A gazetteer of sites and finds within a 1km wide corridor centred on the proposed route is presented at Appendix 16C.

Desk based assessment

16.32 Desk-based assessment was undertaken for a 1km wide corridor along the preferred route in order to establish the baseline environment. The scope of the desk-based assessment and field assessment was agreed in consultation with Mike Watson of Shropshire County Council Archaeology Service and Steve Grenter, archaeological advisor to Wrexham County Borough Council. The general approach and methodology was to collate and report on archive, bibliographic, cartographic, aerial photographic and background sources pertaining to the cultural heritage, including archaeological sites and monuments, historic buildings and historic landscape features within the study area. The aim of this survey was to determine the likely nature, extent, preservation and significance of any archaeological remains that may be present within the area.

Walkover survey

16.33 Field assessment was carried out to clarify the character, location and extent of known archaeological sites and identify unknown sites. A 100m corridor was systematically walked by a professional archaeologist to identify archaeological sites. This comprised an 80m corridor within which poles may be positioned, known as the tolerance corridor for siting supports, plus 10m either side to allow for stays and access tracks.

16.34 A walkover survey of the original route was carried out on 23rd-27th April 2007. A walkover survey of the alternative route to the east of St Martin's was undertaken on 18th-20th July 2007. Areas that were not accessible during the previous surveys were surveyed on 9th-10th and 18th October 2007. Subsequently, a small change was made to the alignment of the route in the vicinity of the rivers Dee and Ceiriog. This minor realignment was surveyed on 15th and 16th April 2008 and the figures in the environmental statement show this new alignment. The route marked on the figures within Appendices 16A and 16B (the original DBA and the DBA for the alternative route to the east of St Martin's) does not incorporate this minor realignment.

16.35 A visit was also carried out on 27th January 2009 to inspect in detail the proposed pole locations sited close to the line of Wat's Dyke at **OA25**, south west of Black Brook Bridge, and at **OA51**, near Pen-y-Bryn, St Martin's.

16.36 On each of these occasions, the surveys were conducted in good light and good weather, and consequently it is possible to have a high level of confidence in the results.

Assessment of effects upon settings

16.37 During the walkover surveys, Scheduled Monuments, listed buildings and Registered Parks and Gardens within 500m of the proposed route were examined to assess any potential effects upon their settings arising from the development. Initially this was by assessing whether or not the proposed overhead line was likely to be visible from the cultural heritage feature. This was undertaken from the survey corridor, using the principle of intervisibility.

16.38 The initial assessment was supplemented by further research into the historical context of features, and by visiting the features to gain an appreciation of their local context and setting. This enabled a judgement to be made as to the extent to which this would be impinged upon by the proposed overhead line. No access was sought to the interior or curtilages of listed buildings or monuments. It was possible to make an informed assessment from publicly accessible areas adjacent to the features.

16.39 As a conclusion to this research, a further walkover survey was conducted on 10th March 2009 in order to confirm the likely effects on the settings of the scheduled sections of Offa's Dyke (**OA5** and **OA7**), Wat's Dyke (**OA25**) and the scheduled tumulus at Hafod-y-Bwch (**OA21**). This survey also included a visit to assess the settings of the Drive Wood section of Wynnstay Park, and the Listed Buildings Bryn House (**OA156**), Eyton Park Lodge (**OA37**), Wynnstay Park Kennels (**OA38**) and Crab Mill (**OA44**). In addition a visit was made to the point that the line will cross the Llangollen Canal (**A21**) in order to assess the potential setting effects on the canal and associated Listed structures at New Marton Lock (**A22** and **A23**).

Assessing archaeological importance

16.40 The importance of each cultural heritage feature was assessed through the exercise of professional judgement in relation to the criteria applicable to Scheduled Monuments:

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

Table 16.1: Criteria used to determine Importance of Receptors

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
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.

16.41 The sensitivity of the archaeological resource depends 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 effects

16.42 The **nature of effects** was assessed for the proposed development, with the main types of potential significant effect on sites of archaeological interest being:

- direct effect: 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.

16.43 The predicted **magnitude of effects** was assessed as follows:

Table 16.2: Criteria used to determine Scale/Magnitude of Effect

Scale of Effect	Description
High	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
Medium	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
Low	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

Significance of potential effects

16.44 The significance of potential effects was assessed by taking into account the sensitivity of the archaeology or built heritage and the magnitude and nature of the potential effect upon this resource.

16.45 The interaction of the scale of effect (Table 16.2) and the importance of the receptor (Table 16.1) produces the effect significance. This was calculated by using the matrix illustrated in Table 16.3.

Table 16.3: Significance of Potential Effects upon Cultural Heritage

Resource Value (Importance)	Scale of Effect Upon Receptor			
	High	Medium	Low	Negligible
International	Major	Major	Moderate	Minor
National	Major	Major	Moderate	Minor
Regional/ County	Major	Major/Moderate	Moderate	Minor/Neutral
Local/Borough	Moderate	Moderate	Minor	Minor/Neutral
Local (low)	Moderate – Minor	Minor	Minor	Neutral
Negligible	Neutral	Neutral	Neutral	Neutral

16.46 The effects were categorised according to the established seven-point scale and terminology of Major, Moderate and Minor Beneficial and Adverse and Neutral effects presented in Table 16.4.

Table16.4: Effect Significance Category

Nature of Effect
Major beneficial (positive) effect
Moderate beneficial (positive) effect
Minor beneficial (positive) effect
Neutral effect
Minor adverse (negative) effect
Moderate adverse (negative) effect
Major adverse (negative) effect

16.47 The effect significance category for each identified receptor or feature was also qualified, and recommended mitigation measures provided, where possible at this stage, to effects that are of moderate significance or above.

16.48 The residual impact assessment took into consideration the ability of the mitigation to reduce the effect, its likely success and SP Manweb's commitment to undertake the mitigation.

16.49 A level of confidence was attributed to each predicted effect. For the purpose of this assessment, the criteria for these definitions are set out in Table 16.5.

Table 16.5: Effect Prediction Confidence

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

In this assessment, any effect that is judged to be either major or moderate will be considered to be 'significant' within the terms of the Electricity Works (EIA) Regulations.

Baseline conditions

Topography

16.50 The scheme lies in the Borders region between England and Wales, extending south from the built up area of Wrexham, Clwyd, to the urban area of Oswestry, Shropshire, and passes through the parishes of Esclusham, Ruabon, Erbistock, Park Eyton, St. Martin's Selattyn & Gobowen, Whittington and Oswestry, within the administrative areas of Wrexham County Borough Council, North Shropshire District Council and Oswestry Borough Council.

16.51 The landscape through which the proposed development passes is predominantly rural and consists of pasture and hay fields, with only a small number of arable fields, most of which are located in the vicinity of the village of St. Martin's. The topography is for the most part rolling hills, cut by the single steep-sided valley of the River Dee, which the route crosses near its confluence with its tributary the River Ceiriog.

16.52 In addition to small areas of plantation at the southern end of the Study Area around

Fernhill Hall and at Hillyards Plantation to the east of Gobowen, the landscape has a generous amount of tree cover, predominantly provided by field boundaries rather than by woodland blocks, and visibility is often limited due to the size of many of the hedgelines defining field boundaries, many of which are 2 – 3 m high.

16.53 Shropshire possesses some of the oldest geology in the country, including pre-Cambrian formations around 600,000,000 years old. The Long Mynd, Wrekin and Caer Caradoc features sit upon these sandstone formations, and are central to the development of human activity in the region. They not only provide the location for farming patterns from prehistory onwards, but also show the remains of Iron Age hill forts, such as Old Oswestry, and Bronze Age barrow cemeteries.

Previous archaeological investigations within the study area

16.54 Marches Archaeology carried out a desk-based assessment, walkover survey and watching brief within the northern part of the Study Area in 2003 as part of the installation of the Overton to Chirk gas pipeline. This work included an evaluation and subsequent excavation of an earthwork west of Lower Farm, Pen-y-Bryn, which was demonstrated to be part of Wat's Dyke (**OA51**). During the watching brief phase of the project two groups of worked flint were recovered from topsoil, but neither group contained chronologically diagnostic types.

Designated sites and gazetteer of sites

16.55 Figure 16.1 identifies sites designated for their cultural heritage value within 500m of the proposed route. Appendix 16C is a gazetteer of archaeological sites and finds within the 1 km Study Area. Each entry has been allocated an OA number, which is included in the gazetteer, referred to in the text and marked on the Archaeological Features Mapping (Figs 16.2 – 16.19). Numbers with the prefix "OA" are sites identified in the initial assessment, and those prefixed "A" are additional features identified in the assessment of the alternative route to the east of St Martin's. Where a site was referred to in both previous reports, the number used in the original report has been preferred here.

Designated sites within the 100m corridor

16.56 Three designated sites have been identified within the 100m corridor:

- Outbuilding associated with Esclusham Hall (**OA13**), a Grade II Listed Building
- The section of Offa's Dyke between Bronwylfa Road and Pentrebychan Brook (**OA14**) is a Scheduled Monument. The route corridor crosses Offa's Dyke, although the section crossed (which runs along the line of an existing road) is Unscheduled.
- The section of Wat's Dyke between Black Brook Bridge and Pentre-Clawdd (**OA25**) is a Scheduled Monument

Designated sites within the 1 km corridor but outside the 100m corridor

16.57 A total of 24 designated sites have been identified within the 1 km corridor but outside the 100m corridor, comprising five Scheduled Monuments and 18 Listed Buildings, and one (Esclusham Hall, **OA12**), which is both a Listed Building and a Scheduled Monument.

16.58 The following are Scheduled Monuments:

- OA5 The Cadwgan Hall section of Offa's Dyke
- OA7 - The Railway to Bronwylfa Road section of Offa's Dyke
- OA21 - Hafod y Bwch round barrow, Rhosllanerchrugog
- OA142 - Old Oswestry Hill Fort
- OA158 - The section of Wat's Dyke extending north from Old Oswestry Hill Fort

16.59 There is one Grade II* Listed Building that is also a Scheduled Monument:

- OA12 - Esclusham Hall

16.60 There are two Grade II* Listed Buildings:

- OA38 - Wynnstay Park Kennels
- A15 - Pentre Morgan farmhouse

16.61 The following are Grade II Listed Buildings:

- OA 16: Pentrebychan Hall Dovecote
- OA 22: Signpost at the south-west end of Hafod Road
- OA34 - Moreton Below House
- OA37 - Park Eyton Lodge, Wynnstay Park, Ruabon
- OA 44: Crab Mill, Ruabon
- OA56 - barn at Top House farm, Pen-y-Bryn
- OA121 - Great Fernhill farmhouse
- OA128 - Pentreclawdd farmhouse
- OA156 - Bryn House
- A17: Cross Lanes Farmhouse
- A18 - Plas Wiggin farmhouse
- A19 - barn at Plas Wiggin farm
- A20 - Pen-y-Bryn farmhouse, Wigginton
- A22 - Lock-keeper's cottage, New Marton lock
- A23 - New Marton Bottom Lock on Ellesmere canal
- A29 - Derwen House

Registered Parks and Gardens within the1km corridor

16.62 A detached portion of Wynnstay Park (**OA157),** a Grade I Registered Park and Garden, is located within the 1 km corridor. The Essential Setting of Pen-y-Lan (**OA159**) Registered Park falls within the 1 km corridor, although the park itself does not.

Archaeological and historical background

Neolithic period (c 4 000 - 2200 BC)

16.63 The earliest evidence for human activity identified within the Study Area is a flint scraper dating from the Neolithic period (*c* 4000 – 2000 BC) found on the surface of a tilled field south west of Lower Farm, Pen-y-Bryn **(OA60)**.

16.64 Two small groups of worked flint and chert **(A10, OA62)** were recovered from topsoil during the watching brief on the Overton to Chirk gas pipeline, but contained no diagnostic types and could only be dated broadly to the prehistoric period, although

they are most likely attributable to the Neolithic or Bronze Age.

Bronze Age (c 2200 - 700 BC)

16.65 Evidence for activity dating from the Bronze Age (*c* 2000 – 700 BC) largely takes the form of funerary monuments. Such monuments have been identified at four locations within the study area. Cropmarks of ring ditches have been identified from aerial photographs at two locations south west of the village of Henlle, comprising a group of up to four such features within the 100m corridor **(OA109)** and a further two *c* 400 m from the proposed route **(OA111)**. These ring ditches are likely to represent the remains of burial mounds that have been levelled by ploughing, leaving only the surrounding quarry ditch and possibly the central burial. A small mound recorded at Pen-y-Bryn **(OA55)** may also be the remains of a Bronze Age barrow, although there is some doubt as to its identification: an investigation by Shropshire County Council SMR in 1991 was unable to identify the feature either on aerial photographs or on the ground.

Iron Age - Roman period (c 700 BC - AD 410)

16.66 Very little evidence has been identified within the study area for activity during this period, although the presence of a substantial hill fort at Old Oswestry (**OA142**) provides evidence for an Iron Age community in the local area. A cropmark of a rectangular enclosure (**OA116**) and associated trackway (**OA115**) at Great Fernhill is believed on morphological grounds to be of Iron Age or Roman date, and may be the location of a small rural farmstead.

16.67 The cropmark of a rectangular enclosure *c* 300m west of Old Oswestry (**OA138**) has been interpreted as the remains of a temporary camp constructed by the Roman army.

The Medieval Period (c AD 410 to 1500)

16.68 During the early medieval period the area in which the study area lies was located near the border between the Anglo-Saxon kingdom of Mercia and the Welsh kingdom of Powys to the west. Two earthworks, Offa's Dyke (**OA5, 7, 14**) and Wat's Dyke (**OA25**, **51, 142, 158**), each comprising a bank with a ditch on the western side, are believed to be defences constructed by the Mercians to define the western boundary of their territory. The proposed route crosses Offa's Dyke near Pentrebychan, where there is a break in the Dyke through which Pentrebychan Brook and the B5426 Smithy Lane pass (**OA14**). The proposed route crosses Wat's Dyke at two locations. South of Black Brook Bridge (**OA25**) it crosses a section of the earthwork that is a Scheduled Monument, and at the top of the east side of the valley of the River Ceiriog it crosses a much reduced earthwork (**OA51**) that was confirmed as being part of the dyke in 2003 by investigations associated with the Overton to Chirk gas pipeline. Further south, a section of the Dyke emerging from the northern edge of Old Oswestry Hill Fort crosses the edge of the 1 km study area. (**OA 158**).

16.69 Cadwgan Hall Mound, which lies just outside the northern end of the study area, has been suggested as a possible motte, part of an earthwork and timber castle constructed by the Normans in the years following the Conquest. However this identification is not certain and it has also been interpreted as a barrow or a natural feature.

16.70 Little evidence survives for activity dating from the remainder of the medieval period, although several timber buildings survive in the Study Area from the later part of the period. The only building within the Study Area identified as definitely having medieval origins is Plas Wiggin farmhouse **(OA A18)**, a Grade II Listed building that has seen considerable later remodelling. The Grade II* Esclusham Hall (**OA12**) probably dates to the late 15th or early 16th century, but was remodelled in 1677 with the insertion of an upper floor over the hall and the partial reconstruction of the external walls. Crab Mill, Ruabon (**OA44**) was originally a cruck framed house, now surviving within a 19th century reconstruction. It is Listed Grade II.

16.71 Two fields within the study area have names that suggest that they were formerly the locations of crosses during the medieval period, although neither cross survives. These are Cae'r Groes, Talwrn (**OA8**), situated at the northern end of the study area, and Cae Gosper, Diinlle Isaf (**OA42**). The latter is thought to be the Capel Kollen mentioned in a 1620 survey and traditionally the site of a cross or chapel.

16.72 An earthwork enclosure near Ddôl **(OA49)** may also be of medieval date, but could be more recent, and the areas of ridge and furrow earthworks within the Study Area all appear to be too narrow and slight to be of medieval date, and are more likely to be post-medieval. This evidence would indicate that the Study Area was only sparsely settled during the medieval period, and that agriculture here may have been pastoral rather than arable at this time.

Post Medieval and Modern periods (c 1500-present)

16.73 The landscape changed substantially during the post-medieval period, when numerous farms were established throughout the Study Area. After the medieval farmhouses mentioned above, the earliest was probably Pen-y-Bryn farmhouse, Wigginton **(A20)**, which may have been built as early as the 16th century. Pentre Morgan farmhouse **(OA A15)**, Hafod y Bwch farmhouse and barn (**OA19, 20)**, Great Fernhill farmhouse **(OA121)** and Bryn House **(OA156)** were built during the 17th century, when the medieval Plas Wiggin **(A18)** was remodelled and a barn **(A19)** added. Top House farm **(OA58)** and its barn **(OA56)** may be of 17th century date but this is uncertain, as although a building is shown at this location on the tithe map none is indicated on the subsequent enclosure map. The farmhouses at Moreton Below House (**OA34**), west of Gyfelia, Cross Lanes Farm, St Martin's **(A17)** and Derwen House, south east of Gobowen **(A29)** are also of Post-medieval date. All these buildings have been Listed at Grade II. There are numerous smaller buildings within the Study Area. In the village of Pentrebychan is a dovecote associated with the hall of the same name (**A16**), and there are further outbuildings associated with the farmhouse at Plas Goulbourn (**OA39**) and Esclusham Hall (**OA13**). The agricultural wealth of the area during the early 19th century is demonstrated by the construction of large houses at Wynnstay Park (**OA157**) and Fernhill Hall (OA **A32**) during the 19th century.

16.74 Areas of ridge and furrow earthworks identified at five locations within the study area are also likely to be associated with this expansion in agriculture. These have been found on the eastern side of the valley of the River Ceiriog **(OA50)**; near Derwen House **(OA A29)**; at Hafod y Bwch, Rhostyllen (**OA132**); near Pentre-clawdd (**OA153**) and at Cae-gwydd (**OA154**). The produce of at least some of these farms may have been processed at the water mill near Great Fernhill **(OA119)**, although the buildings now standing on this site may be of more recent date.

16.75 The industrial heritage of the area is represented within the Study Area by the former Iftonrhyn Colliery **(OA66),** and coal workings near Ifton Hall **(OA 61)**, the dismantled

colliery at Hafod y Bwch Colliery (**OA24**). There was also a brick works at Ifton Heath **(A14),** which now survives only as the hollow of the former clay pit, and an iron mill that presumably gave its name to the hamlet near Fernhill **(OA113)**.

16.76 The exploitation of these resources required a communications infrastructure, represented within the Study Area by the Shrewsbury and Chester Railway **(OA 152**), which was opened in 1846-8 and crosses the southern tip of the Study Area near the end of the proposed route, and Ellesmere Canal **(A21)** now known as Shropshire Union Canal (Llangollen branch), which will be crossed by the proposed route. The canal also features two listed buildings: an early 19th century lock-keeper's cottage near New Marton Bridge **(A22)** and a lock half way between this site and Hindford **(A23)**.

16.77 A possibly ancient road **(OA16)** extending from St Martin's Moor to east of Pentre Madoc and a trackway near Pen-y-Bryn **(OA54)** are likely to be routes of medieval or post-medieval date.

Historic hedgerows

16.78 The Hedgerows Regulations 1997 (DoE; and new guidance 2002) make provision for the protection of hedgerows considered to be of landscape and/or historical and natural history importance. The Regulations state that a hedgerow can be considered to be 'important' if it meets certain criteria. Before the removal of any hedgerow to which these regulations apply, the relevant planning authority must be notified. If the planning authority considers the hedgerow to be of some historic significance, it may serve a hedgerow retention notice to the effect that the hedgerow should not be removed.

16.79 There are a large number of extant hedgerows within the 100m corridor that meet the historical value criteria to be designated as 'Important' under Schedule 1 of the Hedgerow Regulations. These have been listed in the Cultural Heritage Gazetteer (Appendix 16C) and marked on the Archaeological Features Mapping (Figs 16.2 – 16.19). These comprise **OA500-626**.

16.80 All of the hedgerows noted above meet the historical value criteria to be designated as 'Important' under Schedule 1, Paragraph 5, which refers to hedgerows that form an integral part of a field system pre-dating the Inclosure Act of 1845. All of these hedgerows are shown as field boundaries on the tithe maps of Chirk (1839), Ellesmere (Duddleston) (1839), Erbistock (1845), Ruabon (Moreton Below, Bodylltyn, Rhyddallt, Belan, Hafod, Moreton Anglicorum, Dinhille Issa) (1846), St Martin's (Ifton Rhyn) (1838), Whittington (Ebnal) (1839), Whittington (Hindford and Henlle) (1839), Whittington (Fernhill) (1839), Whittington (Whittington) (1839), and Wrexham (1844). Although the tithe map for Ruabon (Moreton Below, Bodylltyn, Rhyddallt, Belan, Hafod, Moreton Anglicorum, Dinhille Issa) was not published until after the Inclosure Act, it is considered likely that the hedgerows depicted on it were in existence for some time prior to this, and therefore they are included in this survey.

16.81 A number of hedgerows meet the historical value criteria to be designated as 'Important' under both Schedule 1, Paragraph 5 and Schedule 1, Paragraph 1. Paragraph 1 refers to hedgerows that mark the boundary of a historic (pre-1850) parish or township:

- Hedgerow **OA508** defines the boundary between the historic parishes of Wrexham, to the north, and Ruabon, to the south;
- Hedgerows **OA522**, **OA528** and the south part of **OA527** define the

boundary between the historic townships of Moreton Below, to the west, and Moreton Anglicorum, to the east;
- Hedgerow **OA544** defines the boundary between the historic parishes of Ruabon, to the west, and Erbistock, to the east;
- Hedgerows **OA594** and **OA597** defines the boundary between the historic parishes of St Martin's, to the west, and Ellesmere, to the east;
- Hedgerow **OA618** defines the boundary between the historic townships of Ebnall, to the north, and Henlle, to the south.

16.82 Hedgerow **OA517** meets the historical value criteria to be designated as 'Important' under both Schedule 1, Paragraph 5 and Paragraph 2. Paragraph 2 refers to hedgerows that incorporate an archaeological feature recorded in a Sites and Monuments Record, in this case Wat's Dyke (**OA25**).

Assessment of effects

Details of potential development effects

16.83 Overhead power line construction follows a standard sequence of activities, comprising preparation of access for vehicles, excavation of foundations for the poles, delivery and erection of the poles, undergrounding/deviation of lower voltage lines where necessary for safety clearances, delivery of conductor drums and stringing equipment, erection of insulators and conductors, and clearance and reinstatement of the site. From this a number of potential effects that could affect buried archaeological remains can be identified.

Construction of temporary access routes

16.84 Where possible access will be via existing farm tracks. Every effort will be taken to minimise land damage by using four wheel drive or tracked vehicles. However, where archaeological earthworks are present the use of such vehicles will cause damage to the upstanding remains.

16.85 Where there is no existing access available or where ground conditions prevent normal access, temporary access routes may have to be constructed, in which case either a trackway system or temporary stoned access road will be used. If preparation of access roads entails the stripping of topsoil, this will:

- remove entirely all earthworks, structures or deposits contained within or upon the topsoil;
- dislocate or destroy any artefacts present in the topsoil;
- expose any underlying archaeological features or deposits in the natural subsoils to damage, including movement of plant across areas stripped of topsoil, compaction by heavy plant during the stripping process or subsequent operations.

16.86 It should also be noted that stripping of topsoil without archaeological supervision may result in over-stripping, which will impact any archaeological deposits located beneath the topsoil.

Ground excavations for erection of wooden poles

16.87 Poles will be erected at intervals varying between a minimum of 60m and a maximum of 135m, with an average span being 80m. The largest H pole structure, for failure containment, will comprise two poles, 6m apart. Some supports will need to be

further secured with stays, extending the area of land take. Erection of wooden poles requires excavation to position bracing, earth mats, and poles. Excavation will normally be backfilled with the original materials, any surplus being removed from site. The foundations for each pole will be 2.5m deep, in addition to which each pole's earth mat, comprising two earth conductors laid at the base of the pole in an 'X' arrangement horizontally, will be about 600mm deep. The maximum overall working area at pole installation sites is estimated to be 600m^2, including the largest area of permanent land take with stays and the working and passing area around this land take. Excavations for pole foundations and earth mats will:

- remove entirely all earthworks present at the ground surface;
- dislocate or destroy any artefacts present in the topsoil;
- completely destroy all but the deepest archaeological features present;
- truncate the upper part of deeper features.

Undergrounding of cables

16.88 Cable sections will be installed at either end of the overhead line to connect the circuit to the substations at Legacy and Oswestry. Wherever possible the cables will be installed within existing public highways, and where this is the case and only ground previously disturbed by highway construction and laying of services is affected there should be no effect on buried archaeological remains. Where trenches for underground cables are excavated into previously undisturbed ground, this excavation will:

- remove entirely all earthworks, structures or deposits contained within or upon the topsoil;
- dislocate or destroy any artefacts present in the topsoil;
- completely destroy any shallow archaeological features present;
- truncate the upper part of deeper features

Presence of overhead lines and wooden pole support structures

16.89 Once erected, the overhead line and wooden pole support structures may have a negative visual effect on cultural heritage features within the vicinity.

Felling of trees

16.90 Where the route of the line passes over or in close proximity to trees that could infringe safe clearances to 'live' conductors, the trees will be felled or pruned prior to the construction of the line. Ground disturbance associated with the removal of trees may disturb buried archaeological remains, resulting in:

- removal of or damage to any earthworks or deposits beneath the trees;
- dislocation of any artefacts present in the topsoil around the trees.

Route upon which impact assessment undertaken

16.91 As outlined in Chapter 11, following adoption of a proposed route, further detailed route planning was undertaken in order produce a detailed development footprint upon which the environmental impact assessment is based. Archaeological surveys were undertaken based upon an 80m wide corridor within which support poles would be sited, plus 10m either side for access and stays. Detailed line design was also undertaken within this corridor, to ensure that the overhead line was technically

feasible within an area where environmental information was known.

16.92 Assessment of effects is based upon the assumption that support poles could be sited at any location within the 80m wide tolerance corridor. A direct effect is predicted to occur upon any archaeological site present within this tolerance corridor, plus 10m either side (allowing for working area and stays).

16.93 The locations of temporary storage areas, construction accesses and additional working areas required for stringing operations are not yet known and the effects of these have not been assessed, although the selection of locations would comply with the requirements of the Environmental Management Plan.

Assessment of effect on the identified cultural heritage resource

Direct effects on statutorily designated sites

16.94 The proposed route crosses a section of Wat's Dyke south of Black Brook Bridge that is a Scheduled Monument (**OA25**). Any excavation for pole foundations and earth mats or stripping associated with the construction of temporary access roads at this location will result in a high scale of effect on a feature of national significance resulting in a major effect. This part of the earthwork is now followed by a modern field boundary, marked by a hedgeline, with the ditch lying on its eastern side and the bank on the western side. Removal of any part of this hedge would cause damage to the earthwork, resulting in a potentially medium scale of effect upon the monument. This would result in an overall effect of major significance.

16.95 There will be no direct effect on the nationally important outbuildings of Esclusham Hall (**OA13**), or on the scheduled section of Offa's Dyke (**OA14**).

Direct or potential effects on undesignated sites

16.96 The place-name Cae'r Groes (**OA8**), near the Legacy sub-station suggests the former presence here of a cross, but no remains have been identified here and it is likely that any such remains have been damaged or destroyed by modern development. The fact that this section of the route comprises underground cable laid within the existing road would seem to further reduce the likelihood either that deposits remain or if they do that they will be significantly affected by the scheme. The effect has therefore been categorised as being a low scale of effect on a site with potentially local interest. This would result in an overall effect of minor significance.

16.97 The proposed route will cross between scheduled sections of Offa's Dyke **(OA14**) at Pentre-Bychan, although the section crossed is not itself scheduled. This section of the route comprises underground cable routed along a section of historic road. Although no above ground remains of the dyke survive within this area it is possible that below ground remains may survive beneath the road base layers and will be affected by any intrusion below these. This could result in a low scale of effect on a nationally important site, an effect of moderate significance.

16.98 The proposed route crosses a section of Wat's Dyke that is not protected by statutory designation on the south side of the valley of the River Ceiriog (**OA51**). Although the earthwork is very slight at this location, excavation of other, similarly vestigial, sections of the Dyke have revealed a largely undamaged in-filled ditch. Any excavation for pole foundations and earth mats or stripping associated with the construction of temporary access roads at this location therefore has the potential to result in a high scale of effect on a feature of potentially regional to national

significance. This will result in an effect of major significance. This part of the earthwork is located at the top of a wooded slope, and removal of any of these trees may cause a potentially medium scale of effect upon to the earthwork, resulting in a moderate effect.

16.99 The proposed corridor crosses an area of ridge and furrow identified during the walkover survey south of the A539 (**OA154**). Effects on this site of local importance are likely to be low, with a resulting minor effect.

16.100 The proposed route crosses a field known as Cae Gosper at Dininlle Isaf, Rhiwabon (**OA42**) the name of which suggests that it was once the site of a cross and/or chapel. Although no evidence is visible on the surface, it is possible that buried remains associated with this structure may be present. If poles are located within this field excavation for their foundations and earth mats may result in a medium scale of effect on a feature of probable local importance. This will result in an effect of minor significance. If a temporary access route needs to be constructed across this field, any stripping of topsoil could also result in a similar effect. The confidence level attributed to this effect is low, as the existence/location of the cross or chapel is uncertain.

16.101 The proposed route crosses the course of an ancient road identified from map evidence, extending eastward from St Martin's, and now followed by the modern B5068 (**A16**). Any remains associated with this road will be buried beneath the present road and will not be affected by the development.

16.102 The proposed route crosses Shropshire Union Canal (Llangollen branch) (**A21**). It is assumed that poles will be located sufficiently far from the canal to avoid causing any physical impact and therefore will result in a neutral effect.

16.103 Cropmark evidence for a group of ring ditches has been identified within the 100m corridor between Gobowen and Hindford (**OA109**). These are likely to represent the remains of Bronze Age barrows, the mounds of which have been levelled by ploughing. The known ring ditches are located within the eastern part of the 100m corridor, to the north of the minor road leading west out of Hindford, but they may represent only the most visible part of a more extensive area of archaeological remains. Barrow cemeteries can include other, more ephemeral features including inhumation and cremation burials without ring ditches, while the enclosure may be evidence for more extensive landuse rather than an isolated feature. The feature is considered to be of regional/county importance, with a likely medium-high scale of effect (dependent upon whether features are affected by any potential haul road or by pole foundations) resulting in an effect of major/moderate significance.

16.104 The proposed route passes within 100m of a cropmark complex representing a probable Roman-British enclosure (**OA116**). The location and extent of this feature is uncertain and it is possible that deposits associated with this feature will be encountered during any intrusive works (pole foundations, access tracks etc). The feature is of uncertain but possible local/borough importance. The scheme will have a potentially medium scale of effect upon the feature resulting in an effect of moderate significance.

Indirect effects on statutorily designated sites

16.105 Through initial walkover survey and subsequent site visits to cultural heritage features, the potential for the proposed overhead line to have an effect upon the

settings of Statutorily Designated sites and Registered Parks and Gardens was investigated. The results of this assessment are presented in Table 16.6 below.

Table 16.6: Potential effects on settings of designated sites within the study area

OA no.	Site name	Importance	Designation	Factors affecting visibility of OHL from receptor site	Scale of effect upon setting	Signifi-cance
5	Offa's Dyke, Cadwgan Hall section	National	Scheduled Monument	No visual impact - shielded from the proposed development by an area of woodland around Esclusham Farm	Negligible	Minor
7	Offa's Dyke, Railway to Bronwylfa Road	National	Scheduled Monument	No visual impact - shielded from the proposed development by an area of woodland around Esclusham Farm	Negligible	Minor
12	Esclusham Hall	National	Scheduled Monument/ Listed Grade II*	No visual impact, as this part of the route will be a buried cable	Negligible	Minor
13	Esclusham Hall outbuildings	Regional	Listed Grade II	No visual impact, as this part of the route will be a buried cable	Negligible	Minor/ Neutral
14	Offa's Dyke, section N of Bryn Yr Owen Farm	National	Scheduled Monument	No visual impact, as this part of the route will be a buried cable	Negligible	Minor
16	Pentrebychan Hall Dovecote	Regional	Grade II	No visual impact, as this part of the route will be a buried cable	Negligible	Minor/ Neutral
21	Barrow NE of Rhosllanerchrugog	National	Scheduled Monument	Clearly visible, but at some distance. The monument is on a false crest line with good view over proposed route. Overhead lines pass close to the barrow to its north. Another line will be paralleled by the proposed overhead line in the immediate viewshed to the south.	Low	Moderate
22	Signpost at end of Hafod Road	Regional	Grade II	Roadside feature, shielded by distance and hedgerow.	Negligible	Minor/ Neutral

OA no.	Site name	Importance	Designation	Factors affecting visibility of OHL from receptor site	Scale of effect upon setting	Signifi-cance
25	Wat's Dyke south of Black Brook Bridge	National	Scheduled Monument	Feature will be crossed by overhead line. Section to be crossed does not exist as a significant earthwork. Surviving earthwork sections lie within 100m to north and south but area to be crossed is only partially visible from more substantial earthwork sections of Wat's Dyke which are followed by the Wat's Dyke public footpath.	Low	Moderate
34	Moreton Below House	Regional	Listed Grade II	Visible, but distant	Negligible	Minor/ Neutral
37	Park Eyton Lodge	Regional	Listed Grade II	In addition to its distance, the building faces north-west, away from the proposed development, and is largely shielded from it by a hedge and a large tree	Negligible	Minor/ Neutral
38	Wynnstay Park Kennels	National	Listed Grade II*	The building faces north-west, away from the proposed overhead line, and is partly shielded by its own outbuildings and enclosure wall	Negligible	Minor
44	Crab Mill, Ruabon	Regional	Listed Grade II	Screened by trees and intervening houses	Negligible	Minor/ Neutral
56	Barn at Top House	Regional	Listed Grade II	Screened by a line of trees	Negligible	Minor/ Neutral
121	Great Fernhill farmhouse	Regional	Listed Grade II	Negligible visual effect	Negligible	Minor/ Neutral
128	Pentre-Clawdd farmhouse	Regional	Listed Grade II	Separated from the route by two busy roads	Negligible	Minor/ Neutral

OA no.	Site name	Importance	Designation	Factors affecting visibility of OHL from receptor site	Scale of effect upon setting	Signifi-cance
142	Old Oswestry Hill Fort	National	Scheduled Monument	The hillfort is c 500 m from the proposed line. The hillfort has clear views towards the line of the proposed route but the distance and presence of other intrusive features including a major road (A5) mean that the new line will result in only a very minor alteration in the views from the hillfort.	Negligible	Minor
156	Bryn House	Regional	Listed Grade II	Bryn House lies within 100m of the proposed line and will have a clear view of the new line from windows on its south side.	Low	Moderate
157	Wynnstay Park	National	Grade I Registered Park	There is very limited access to the edge of the park facing towards the proposed line. Where there is a view it is restricted.	Negligible	Minor
158	Wat's Dyke section N of Oswestry	National	Scheduled Monument	The route is mainly underground cable as it parallels this part of Wat's Dyke and is further screened by the presence of a major road (A5).	Negligible	Minor
159	Pen-y-Lan Park	Regional	Grade II Registered Park	Distance and intervening woodland and hedgelines effectively screen view	Negligible	Minor/ Neutral
A15	Pentre Morgan farmhouse	National	Listed Grade II*	This building lies at a distance from the proposed line	Negligible	Minor
A17	Cross Lanes farmhouse	Regional	Listed Grade II	Distance and intervening hedgelines effectively screen	Negligible	Minor/ Neutral
A18	Plas Wiggin farmhouse	Regional	Listed Grade II	Distance and intervening hedgelines effectively screen	Negligible	Minor/ Neutral
A19	Barn at Plas Wiggin	Regional	Listed Grade II	Distance and intervening hedgelines effectively screen	Negligible	Minor/ Neutral
A20	Pen-y-Bryn farmhouse	Regional	Listed Grade II	Distance and intervening hedgelines effectively screen	Negligible	Minor/ Neutral

OA no.	Site name	Importance	Designation	Factors affecting visibility of OHL from receptor site	Scale of effect upon setting	Signifi-cance
A22	Lock-keeper's cottage	Regional	Listed Grade II	The cottage is set within a small garden enclosed by trees which will block any view of the proposed development	Negligible	Minor/ Neutral
A23	Lock on Shropshire Union Canal (formerly Ellesmere Canal)	Regional	Listed Grade II	Not visible	None	None
A29	Derwen House	Regional	Listed Grade II	This building lies at a distance from the proposed line.	Negligible	Minor/ Neutral
A21	Shropshire Union Canal (formerly Ellesmere Canal)	Can be considered as of National importance	None	The proposed overhead line crosses the canal at an oblique angle and then parallels it in plain view for c 500 m.	Low	Moderate
51	Wat's Dyke	Can be considered as of National importance	None but scheduled elsewhere	The line will cross this feature at right angles and will be additionally screened from the path which follows Wat's Dyke by being on the edge of woodland.	Low	Moderate

16.106 The Scheduled tumulus of Hafod-y-Bwch (**OA21**) at Rhosllanerchrugog stands on a crestline with open views over the proposed overhead line route. The tumulus is a relatively prominent local feature but lies in a secluded rural location comprising of an isolated farmstead surrounded by hedged pastures. A public footpath passes adjacent to the monument adding to its public amenity. The setting of this monument is already crossed by overhead lines, one of which passes within 20m of the monument to its north. Overhead lines are also already present within the southern viewshed from the monument and will be partly paralleled by the proposed overhead line.

16.107 The placing of the proposed overhead line will result in an additional impingement on the setting of Hafod-y-Bwch. This will result in a low scale of effect on a nationally designated feature. This will have an overall effect of moderate adverse significance.

16.108 The proposed route crosses a section of Wat's Dyke south of Black Brook Bridge that is a Scheduled Monument (**OA25).** The section to be crossed does not exist as a significant earthwork. Surviving earthwork sections lie within 75m to north and south but the area to be crossed is only partially visible from the more substantial earthwork sections of Wat's Dyke, which are followed by the Wat's Dyke public footpath. This section of Wat's Dyke lies within an area of farmland comprising of relatively small hedged paddocks. Views to the section to be crossed are therefore very restricted. In addition an existing overhead line already crosses Watts Dyke c 150m to the north of the proposed new crossing point.

16.109 The placing of the proposed overhead line will, therefore, result in only a very localised alteration to the setting of sections of Wat's Dyke which survive as appreciable earthworks. This will result in a low scale of effect on a nationally designated feature. This will have an overall effect of moderate adverse significance.

16.110 The Grade II Listed Bryn House (**OA156**) is an isolated dwelling set within gently rolling farmland. The dwelling has open views to the south over the proposed overhead line route. The 100m corridor passes within *c* 60m of the house. As Bryn House is relatively isolated with a limited historic setting envelope. The presence of the proposed overhead line within its immediate visual envelope will result in a low scale of effect on a regionally important feature. This will result in an overall effect of moderate significance.

16.111 It is anticipated that the other Listed Buildings and Scheduled Monuments within the 1 km corridor will be not be subject to significant effects upon their settings (i.e. effects of minor significance or below). There are anticipated to be similarly minor, and therefore not significant, effects upon the settings of Wynnstay Park (**OA157**) and Pen-y-Lan Park (**OA159**) (see Table 16.6).

Indirect (setting) effects on undesignated sites

16.112 The proposed overhead line will cross the Shropshire Union Canal (Llangollen branch) (**A21**) obliquely and then turn to parallel it for a distance of c 500m. The canal is not a designated feature but can be considered important as a historical feature with a high level of public amenity as a tourist attraction. The canal lies in a valley that predominantly comprises pastureland. Views to the canal are non existent from beyond the break of slope at the top of the valley sides. The canal is also crossed and paralleled by an existing overhead line within 200m of the location where the proposed overhead line will cross. The listed canal structures and lock at New Marton Lock have only very partial views towards to proposed overhead line.

16.113 The canal can be attributed national significance but the placement of the proposed overhead line will only impinge on the setting of the canal at a very local level. The scale of effect on the setting of the Llangollen Canal is, therefore, rated as being low. This will result in an overall effect of moderate significance.

16.114 The route will also cross an unscheduled section of Wat's Dyke (**OA51**) on the eastern edge of the valley of the River Ceiriog. As Wat's Dyke is scheduled elsewhere, this section could also be accorded a national importance

16.115 This section of Wat's Dyke comprises of a relatively insignificant earthwork, but is followed by a public footpath and therefore has a degree of public amenity. Views from, and to Wat's Dyke over the Ceriog valley to the north are severely restricted by Bramble Wood, the eastern edge of which is followed by Wat's Dyke. The proposed overhead line will use an existing gap in the woodland belt. To the east lies open farmland which is crossed by an overhead line on a north/south alignment c 200m to the east of Wat's Dyke.

16.116 Public views towards this section of Wat's Dyke are only possible at a close distance from the public footpath which follows it. The placement of the proposed overhead line will, therefore, have only a very localised impact on the setting of this section of Wat's Dyke. This will result in a low scale of effect on a nationally important feature. This will result in an overall effect of moderate significance.

Summary of effects on the known cultural heritage resource

16.117 A summary of the potential effects upon identified archaeological and cultural heritage features identified is presented in Table 16.7.

Table 16.7: Potential direct effects on identified archaeological and cultural heritage features (before mitigation)

OA no.	***Description of receptor***	***Type of effects***	***Importance of receptor***	***Scale of effect***	***Significance of effect***	***Confidence level***
8	Possible site of cross/chapel Cae'r Groes	Topsoil strip, excavation	Low local	Low	Minor	Low
14	Potential remains of Offa's Dyke preserved beneath present road.	Excavation of cable trench	National/ Regional	Low	Moderate	High
25	Wat's Dyke earthwork	Topsoil strip, vehicles, excavation , tree felling	National	Medium	Major	High
42	Cae Gosper	Topsoil strip, excavation	Uncertain	Uncertain	Moderate/ Minor	Low
51	Wat's Dyke earthwork	Topsoil strip, vehicles, excavation tree felling	National	Medium	Major	High
109	Cropmark of ring ditches	Topsoil strip, excavation	Regional/ County	Medium	Major/ Moderate	Low
115/ 116	Cropmark of possible Roman-British Enclosure and associated trackway	Topsoil strip/ excavation	Local/ Borough	Medium	Moderate	Low
154	Area of ridge and furrow	Topsoil strip, excavation	Low local	Low	Minor	Low

Important hedgerows

16.118 Within the 100m corridor, a total of 126 hedgerows have been identified that meet the historic value criteria to be designated as 'important' under the Hedgerow Regulations. The majority of these will not be affected by the proposed overhead line, as they will be situated under conductors. Pole locations will be adjusted locally to ensure that there is no direct effect upon 'important' hedgerows.

Potential effect on unknown archaeology

16.119 The discovery of a flint scraper (**OA60**) dating from the Neolithic period and flint and chert flakes (**A10, OA62**) dating broadly from the Neolithic or Bronze Age during a watching brief on construction of the Overton to Chirk Pipeline indicate that there is a potential for further, as yet undiscovered remains dating from these periods within the area of the development. It is likely that such remains would consist mainly of flint and chert implements within the topsoil, representing the former locations of camps or settlements, although buried archaeological features could also be associated with such scatters. As the majority of the study area is pasture rather than arable, it is not suitable for field walking and so no systematic surveys have taken place. It is therefore not possible to quantify the potential for the discovery of such material.

16.120 The only evidence identified within the study area for prehistoric or Roman remains is a group of ring ditches likely to represent the remains of Bronze Age barrows located between Gobowen and Hindford (**OA111**) and an Iron Age/Roman period enclosure and trackway at Great Fernhill (**OA115, 116**). The relative lack of settlement evidence may be due to lack of settlement, but it would appear more likely to result from the lack of development, and consequent lack of archaeological investigation. The potential for the proposed development to impact on unknown archaeology of this period is therefore uncertain.

16.121 The proposed route generally avoids the main centres of medieval and later settlement, and there is little potential for the discovery of unknown archaeological remains of these periods.

Mitigation

16.122 The proposed development has the potential to have a direct physical effect on one designated site, this being a section of Wat's Dyke south of Black Brook Bridge (**OA25**), a Scheduled Monument, with a possibly major effect. The most appropriate mitigation strategy for this section of the monument is therefore considered to be avoidance.

16.123 Further design development has enabled optimum pole positions to be established in the vicinity of the monument. This indicates that they will be sited sufficiently far from the monument to avoid any direct effect on the earthwork, and this has been confirmed by a site visit. The pole closest on the north-western side will be at least 30m from the monument, and that on the south-eastern side will be at least 60m away. It is, however, important that vehicles accessing these pole locations do not cross the earthwork.

16.124 A programme of monitoring and survey, intended to ensure that there is no accidental damage to the monument during the construction programme, will be carried out. An archaeological watching brief will be maintained during all excavation associated with the erection of the poles located closest on either side of the Dyke. No vehicles will cross the earthwork, including the in-filled ditch, and no temporary access roads will be constructed on the earthwork, including the in-filled ditch. A watching brief will be maintained during the felling of any trees immediately adjacent to the earthwork, including the in-filled ditch.

16.125 There may also be a major direct physical effect on a section of Wat's Dyke (**OA51)** on the south side of the valley of the River Ceiriog that is not protected by statutory designation. Although this section of the dyke is not scheduled, the scheduling of other sections indicates that the remains are likely to be of national importance. An

effect of greater than negligible magnitude upon this monument is therefore likely to be significant.

16.126 Further design development has indicated that a pole will need to be placed at the break of slope at the top of the valley, in close proximity to the projected line of the Dyke. This has been confirmed by a site visit. The siting of a pole at this location is unavoidable for engineering reasons, and consequently the most appropriate form of mitigation will be through a programme of controlled archaeological excavation of any areas to be affected by intrusive works (pole foundations, access roads, etc) prior to the commencement of the works. As with the scheduled site, there will also be a programme of monitoring and survey, which will also be carried out during any removal of trees from the upper part of the valley slope, intended to prevent accidental damage to the monument.

16.127 The proposed route will cross between scheduled sections of Offa's Dyke (**OA14**) at Pentre-Bychan, although the section crossed is unscheduled. This section of the route comprises underground cable routed along a section of road. No above-ground remains of the dyke survive within this area but it is possible that below-ground remains survive beneath the road base and could be affected by any intrusion below the base layers. Any effect will be mitigated by the maintenance of an Archaeological Watching Brief during any intrusive works in this area.

16.128 Poles will not be located within the field known as Cae Gosper at Dininlle Isaf, Rhiwabon (**OA42**) if this is technically possible. Should it be necessary to place poles within the field, a geophysical survey of the field will be undertaken in order to determine the presence/absence and location of buried remains associated with the possible cross/chapel. Pole locations and access tracks will avoid any remains thus identified, and an archaeological watching brief will be maintained during all excavation associated with the erection of poles within the field.

16.129 An archaeological watching brief will be maintained for any excavation associated with the erection of poles in the vicinity of the cropmark complex between Gobowen and Hindford (**OA109**).

16.130 An archaeological watching brief will be maintained for any excavation associated with the erection of poles in the vicinity of the cropmark complex at Fernhill (**OA 115/116**).

16.131 A total of 126 historically important hedgerows have been identified within the 100m corridor. The relevant planning authority must be notified before the removal of any important hedgerow as defined by the Hedgerow Regulations. If the planning authority considers the hedgerow to be of some historic significance, it may serve a hedgerow retention notice to the effect that the hedgerow should not be removed. Where feasible, all 'important' hedgerows will be retained and any effect on them avoided. Avoidance is the principal mitigation measure: should hedgerows be unavoidably affected any such effect will be minimised. If necessary, losses will be partially mitigated through a process of photographic survey of hedgerow prior to loss, followed by an archaeological watching brief during construction but this should be regarded as a last resort.

16.132 With regard to the unknown archaeological resource, the proposed route crosses an area which has an uncertain but possibly moderate potential to contain archaeological deposits of potentially high importance. The likelihood of such remains is impossible to accurately predict: the area has a low level of known archaeology (as discussed above) but this is likely to be at least partially a reflection of the lack of

archaeological fieldwork in this largely rural and undeveloped area. On present knowledge it can only be categorised as a possibility rather than likelihood. Any such deposits which lie within areas to be directly affected by landtake or construction activities (such as access routes or pole foundations) may be directly affected. This could potentially result in a major adverse effect. This effect can be satisfactorily mitigated through the implementation of an archaeological watching brief during periods of intrusive activity.

16.133 As a general mitigation measure to avoid effects, the positions of cultural heritage features will be taken into account when defining access routes, working areas, temporary storage areas and as necessary when further refining the positions of supports and the cable route post-consent, in compliance with the EMP.

16.134 Specialist archaeological advice will continue during detailed siting of pole positions in sensitive locations and for precise siting of temporary access tracks and other site infrastructure.

16.135 Where a watching brief is proposed, the extent will be agreed with the local planning authority/relevant County Archaeologist. The purpose of the watching briefs would be to allow for the identification and appropriate recording of any currently unidentified and buried features of potential archaeological interest exposed by topsoil removal. In the event that unexpected archaeological remains are identified during the construction works, the requirement for mitigation would be assessed in consultation with the monitoring authorities. Depending on the outcome of this assessment, appropriate measures for the treatment of the resource would be agreed between SP Manweb and the monitoring authorities.

16.136 A strategy will be formalised for reporting any unforeseen archaeological discoveries made during construction to a retained professional archaeological organisation. This would require any unexpected discoveries in areas not subject to archaeological monitoring to be assessed and dealt with appropriately, and would make clear the legal responsibilities placed upon those who make such finds. These arrangements would be included in the EMP, and would be explained in toolbox talks to the workforce.

16.137 No mitigation is proposed in relation to the indirect (setting) effects predicted.

16.138 SP Manweb will liaise with Cadw, English Heritage, Wrexham's Archaeological officer and Shropshire County Archaeologist to agree the process of monitoring implementation of mitigation strategies.

Residual effects

16.139 The proposed development may have a direct physical effect on one designated site, this being a section of Wat's Dyke south of Black Brook Bridge (**OA25**), a Scheduled Monument. This has the potential to result in a major effect. A comprehensive programme of measures will be undertaken to mitigate the effects upon this Scheduled Monument, the prime one being avoidance of siting supports in proximity. The scale of residual effect will be dependent upon the siting of poles or stays. Information regarding the precise locations of poles indicates that the closest poles on either side of the earthwork will be sited sufficiently far away to avoid any direct effect on the monument, resulting in a **moderate** adverse residual (setting) effect.

16.140 There may also be a major direct physical effect on an undesignated section of Wat's Dyke (**OA51)** on the south side of the valley of the River Ceiriog. The remains are

likely to be of national significance. Any effect of greater than negligible magnitude upon this monument is therefore likely to be significant. The siting of a single support pole at this location is unavoidable for engineering reasons. Mitigation through a programme of controlled archaeological excavation of any areas to be affected by intrusive works will lessen this effect, but it will remain a **major**, and therefore significant, adverse residual effect.

16.141 There is a potential for the scheme to affect deposits associated with two cropmark complexes (**OA109**,**115/116**) located close to the proposed overhead line. Any adverse effects will be partially mitigated through the implementation of a Watching Brief during intrusive activities and this will reduce any adverse effects to **minor.**

16.142 The proposed scheme crosses an area which has an uncertain but possibly moderate potential to contain archaeological deposits of potentially high importance. There is therefore the possibility that intrusive activities associated with the scheme will affect hitherto unidentified archaeological deposits of uncertain (but potentially high) significance. Any adverse effects could be (at least partially) mitigated through the implementation of a Watching Brief and agreed follow-on mitigation strategy for any significant features encountered during construction activities. It is likely that the implementation of such a strategy will reduce any potential adverse residual effects to **minor,** and therefore not significant.

16.143 There is potential for an effect of moderate significance on the possible former location of a cross/chapel at Cae Gosper, Dininlle Isaf, Rhiwabon. Mitigation measures identified will reduce this to a **minor**, and therefore not significant, residual effect.

16.144 There is also a potential for unknown buried archaeology to be present within the construction corridor, with a particularly high potential in the vicinity of cropmark complexes located between Gobowen and Hindford. Mitigation measures identified will reduce this to a **minor**, and therefore not significant, residual effect.

16.145 There will be indirect effects of significance on the settings of three designated sites. Bryn House listed building is anticipated to experience an adverse indirect effect of **moderate** significance, as are the scheduled section of Wat's Dyke crossed by the overhead line and the scheduled Hafod-y-Bwch tumulus. In addition there will be effects on the settings of the undesignated but nonetheless historically important Shropshire Union Canal (Llangollen branch) and an unscheduled section of Wat's Dyke. These are considered to be effects of **moderate** significance.

Conclusions

16.146 A desk-based archaeological assessment and field survey have been carried out along the route of the proposed reinforcement. A total of 79 archaeological and cultural heritage features have been identified within the 1 km corridor, comprising 19 Listed Buildings, seven Scheduled Monuments (including three sections of Offa's Dyke and two of Wat's Dyke), one site that is both a Listed Building and a Scheduled Monument, and 52 undesignated sites. In the 100m corridor within which direct effects could potentially occur, there are two Scheduled Monuments, one listed building, and four undesignated sites. One of these undesignated sites, a section of Wat's Dyke (**OA51),** has been identified as being of national importance. . In addition, the 100m corridor contains 126 historically important hedgerows.

16.147 Significant indirect setting effects will be experienced by three designated sites, two scheduled monuments (Wat's Dyke south of Black Brook Bridge and Hafod-y-Bwch

tumulus) and a Grade II listed building (Bryn House). Similarly significant setting effects are likely to be experienced by two undesignated sites considered historically important (Llangollen Canal and unscheduled section of Wat's Dyke).

16.148 A comprehensive programme of mitigation is proposed to reduce the direct effects on the archaeological resource, known and unknown. Implementation of such a programme will generally reduce any potential residual effects of the scheme to minor adverse, although the scheme is likely to have one major adverse residual effect where it directly affects the extant line of Wat's Dyke. The location of this feature would appear to make it difficult to avoid direct effects and a programme of mitigation to reduce as far as possible the significance of such effects has been outlined.

17.0 EFFECTS ON LAND MANAGEMENT

17.1 This chapter considers any likely significant effects of the construction and operation of the proposed overhead line on land management and identifies measures that would be taken to mitigate any significant adverse effects, where practicable.

Land use along the proposed route

17.2 Agriculture is the predominant land use along the proposed overhead line from Legacy to Oswestry. Agricultural land quality along the route corridor is predominantly Grade 3. There are small areas of poorer quality land (Grade 4) in the Dee and Ceiriog valleys, and around the Shropshire Union canal, and a small area of Grade 2 land east of Gyfelia, in the northern part of the corridor.

17.3 Farming along the route predominantly consists of dairy and beef units, with the land mainly down to permanent pasture with cuts of silage taken. The grass fields are often grazed by sheep in the winter. There is some arable, mainly confined to barley, wheat and maze. Fields are below average in size and many of the field boundaries are hedges. Farms are both owner-occupied and estate-owned and tenanted.

17.4 There are two large traditional estates along the route: the Wynnstay Estate and the Brynkinalt Estate. Much of the land is used for hunting and grazing for horses. Other non-farming activities include pheasant shooting and farm activity centres.

17.5 The underground sections of the proposed route are located substantially within public roadways or the substations, and so will have little effect upon agricultural operations.

Potential effects: construction

17.6 Construction effects include those associated with preparatory works (such as the establishment of access to the support structure sites, the contractor's base and storage sites). Effects are also associated with wood pole assembly and erection, and subsequent line stringing. The activities involved in construction are explained in Chapter 4: Project Characteristics.

17.7 It is expected that the overall construction period for the overhead line could last up to 20 months, with a construction rate of approximately 3-4 weeks per kilometre.

17.8 The effects of construction works on an agricultural business would depend on the type of farming being carried out, the ground conditions, and the season of the year in which the construction is undertaken. Normal farming operations may be disrupted. The least disruption occurs to the least intensive farming.

17.9 Depending on the soil type and the weather at the time, damage caused by construction vehicles and plant could cause problems with soil compaction and drainage. Given the small scale of the wood pole supports to be used and the relatively small size of support vehicles and working areas required for construction of the line, these potential effects are expected to be minor.

17.10 There is a possibility that plant and animal diseases could be spread along the line of the route by contractor's vehicles.

Mitigation of construction effects

17.11 Access to pole positions, and the locations of working areas around each pole site, will wherever possible be agreed in advance with the landowners/occupiers. The majority of pole positions would be accessed by existing farm access arrangements and field gates.

17.12 Disturbance of livestock can be a crucial factor, particularly during lambing and calving and SP Manweb will endeavour to avoid any unnecessary access during these activities whenever possible. SP Manweb will arrange pre-entry meetings to ensure that disruption to farming activities is kept to a minimum and there will be liaison with farmers throughout.

17.13 It is recognised that there is a greater risk of damage to land when construction work is carried out in wet ground conditions. However once construction commences, it would only normally be stopped in the very worst weather conditions. SP Manweb will ensure it's contractors carry out the construction work using the optimum balance between 4-wheel drive vehicles and specialist measures such as use of track way or tracked vehicles, that may be considered reasonable in the circumstances.

17.14 SP Manweb will ensure that measures are taken to minimise disturbance or damage in accordance with normal construction practices, as described in Chapter 4, and in accordance with the agreements with landowners and occupiers.

17.15 Effects are primarily caused by the need for access to each support position for construction personnel and materials for wood pole erection. The stringing operations will be by the 'continuous tension' method described in Chapter 4, with vehicles being required at intermittent locations along the route to install the conductor wires. This method means that the conductors do not touch the ground surface. It is intended that the majority of pole positions will be accessed by existing farm access arrangements and field gates.

17.16 SP Manweb would try to ascertain, with the assistance of the landowner/occupier, the location of any field drains which could be damaged by the construction works. These drains may be diverted at pole sites and protected elsewhere. Any damage to land drainage caused by the construction works will be reinstated and/or compensation paid as appropriate.

17.17 Where soil has been compacted, deep ploughing or sub-soiling could be necessary unless compaction is limited to the surface layer. Restoration of compacted areas may subsequently be carried out be the contractor, a specialist agricultural contractor or by the landowner/occupier. The compensation arrangements will reflect the way in which the remedial works were agreed to be carried out.

17.18 SP Manweb will take the necessary steps to ensure that its contractors minimise the effect of the construction of the proposed overhead line. SP Manweb's Wayleave Officers will ensure that there is communication and cooperation with landowners and occupiers to reduce disruption of normal day-to-day farming activities.

17.19 On arable land, markers may be erected to delineate the agreed access routes, where required. Normal agricultural operations could then be carried on outside these routes during the line construction works. SP Manweb will reimburse the reasonable cost of any additional work made necessary by the construction work, such as sub-soiling, liming and harrowing, to subsequently bring the land back to its former condition.

17.20 On grassland, where required, the agreed access routes will be clearly delineated. Any area damaged by the works and agreed to be not in the permanent use of SP Manweb will be reinstated and/or reseeded, to bring it back into agricultural use. Care will be taken to prevent the disturbance and straying of livestock. In the interests of security, all field gates will be kept shut unless otherwise requested.

17.21 Site operatives will at all times follow the rigorous codes of good practice set out by the Department for Environment, Food and Rural Affairs (DEFRA). Normally, access routes will be developed by the passage of contractors' transport and plant only. Grading or surfacing will only be undertaken to make good damage unless agreed otherwise. Special plant, such as the use of track way, will be considered if appropriate to overcome poor access conditions, reduce ground pressure and minimise subsequent soil damage. Any hedges or fences will be replaced where breached for access and construction purposes.

17.22 Care will be taken in locating storage sites, and in storing soil away from water courses and standing water.

17.23 Wood pole erection sites and other work areas will be demarcated where necessary.

17.24 Topsoil and subsoil from the pole foundations will be stored separately. Any surplus subsoil or rock following backfilling, estimated at no more than 10% of the excavated material, will be removed to a licensed tip or otherwise disposed of as agreed in consultation with the landowner/occupier.

17.25 Any timber cut will remain the landowner's property and will be stacked at a convenient location unless removal is requested.

17.26 Contractors and their employees will be instructed to follow good construction practice when working in the countryside, to ensure that domestic or construction refuse, waste material and other material is not left on site once activity at that location had ceased.

17.27 Prior to work commencing, the Company's representative will inspect the land, and agree a detailed record of its condition, including private roads, gateways and fences along the route of the line and access routes.

17.28 Significant incidents which may give rise to later damage claims will be notified to Wayleave Officers as they occur so that investigation can be speedily carried out and remedial work put in hand.

Residual effects: construction

17.29 In summary, there will be some interference with farming activities along the proposed route during the construction period, however this is not considered to be a significant effect upon agriculture.

Potential effects: operation

17.30 In the long term, the loss of farmable land due to the proposed overhead line would be restricted to the area around the wood poles support base.

17.31 Whilst the area lost to farming will be very small, the presence of wood poles within the field system causes inconvenience to agricultural operations, especially during

cultivations, spraying, harvesting and grass cutting. The areas below the conductors and around the poles can be grazed by livestock or cultivated for crop production.

17.32 It is not anticipated that underground earth matting will have any effect upon farming practices, other than during installation.

17.33 Overhead lines present a potential hazard of contact or flashover between tall agricultural equipment and the conductors. Once an overhead power line is operational, it is necessary to maintain safety clearances. This may limit the use of certain types of agricultural equipment or operations under or adjacent to the line. The risks associated with overhead lines are greater for arable farming, where larger equipment and irrigators tend to be used. Arable farming is less predominant in the study area with fields below average size. This suggests that the likelihood for larger machinery is greatly reduced and therefore there are only very minor possibilities for restrictions on farming activities. SP Manweb's Wayleave Officers will ensure that there is communication and cooperation with landowners and occupiers to reduce disruption of farming activities.

Mitigation of effects during operation of the overhead line

17.34 To compensate the landowner for effects upon the agricultural land, a capital payment is made in return for the granting of permanent easement or, alternatively, annual payments in the case of a wayleave. An element of these payments reflects the crop losses and disturbance suffered during normal agricultural use of the land.

17.35 To mitigate inconvenience to agricultural operations caused by presence of wood poles, SP Manweb has sought, in the siting of the wood poles, to consult with landowners and tenants as to their preferred location, taking into account all environmental and engineering design factors.

17.36 The easement payment reflects the apparatus located on the landowner's property, which may include wood pole structures and stays.

17.37 Activities by SP Manweb during the operation of the line would be restricted to on-foot line inspections, occasional repairs and maintenance works. All such work would be undertaken after consultation with the landowner except in the case of an emergency.

17.38 There is comprehensive guidance to farmers and agricultural workers on dangers and precautions appropriate to work near overhead lines, available from the Health and Safety Executive. In addition, SP Manweb makes this and supplementary information readily available. Care has been taken to ensure that there will be sufficient safety clearance for the use of large combine harvesters.

Residual effects: operation

17.39 The presence of pole supports in fields is likely to cause some inconvenience. In acknowledgement of this, the detailed alignment of the route has been designed to minimise this where possible, whilst also respecting environmental and engineering design constraints. In certain locations, modifications have been made to initially suggested pole positions to reduce potential effects of the proposed line on land management activities.

17.40 Maintenance work to the overhead line would cause minimal disruption to farming.

Conclusions

17.41 Through the implementation of the mitigation measures outlined above, potential adverse effects on agriculture would be reduced to a low level. The overall effect of the overhead line on agricultural interests along the route corridor is considered to be minor, and not regarded as significant in terms of the EIA Regulations.

18.0 EFFECTS ON TREES AND WOODLANDS

Introduction

18.1 This chapter considers the likely effects of the proposed overhead line on trees and tree groups. A detailed tree survey of the proposed route corridor has been undertaken, to aid detailed line design and enable an assessment of the potential effects upon the tree resource.

18.2 Changes to the trees and woodlands as a result of the proposed development are likely to have effects upon nature conservation, upon landscape character and upon views. This chapter reports on the likely **magnitude** of the effect of the proposal upon individual trees and tree groups. The **significance** of these environmental effects is considered within Chapters 13, 14 and 15.

18.3 In some situations, changes to the tree resource may also have commercial implications, particularly in areas of forestry plantation. As this is not an environmental effect, but relates to the value of the timber, it is considered within Chapter 17: Effects on Land Management.

The wider context

18.4 This section describes the tree resource within the wider context, based upon the study area for the route selection process, as illustrated on Figure 7.4: Topography and Woodland.

18.5 Small woodlands are scattered throughout the study area, as shown on Figure 7.4: Topography and Woodland. In addition to woodland blocks, there are numerous mature hedgerow trees, giving an overall well-wooded appearance to the landscape. Larger areas of woodland are concentrated in the Dee and Ceiriog valleys (and associated side valleys), on the Berwyn foothills, and in parkland landscapes. The least wooded part of the study area is the south-eastern part, in the vicinity of St Martin's and Dudleston Heath.

18.6 Ancient woodland is defined in England and Wales as land continuously wooded since 1600. Identification of an area of woodland as being of ancient origin does not bring statutory protection; however, local authorities generally seek to protect them in accordance with national and local planning policies. This applies particularly to ancient semi-natural woodland, which are areas of woodland that have never been cleared or replanted, as these are considered a valuable and irreplaceable natural resource.

18.7 The Ancient Woodland Inventories for Shropshire and Clwyd (which cover Wrexham CBC) indicate that the majority of ancient woodlands are located in the Dee valley, although there are also some large ancient woodland areas in the vicinity of Erddig Hall, south of Wrexham.

Tree cover generally

18.8 Woods with an area of 0.1 hectares or larger cover 11.6% of Great Britain. The coverage of England and Wales is 8.4 and 13.8% respectively. The majority of woods are over 2 hectares in size.

18.9 In relation to the study area, Shropshire has 8.5% tree cover, whilst Denbighshire (which includes the Wrexham CBC area) has between 9 and 11.9% cover. The study

area has 9.5% tree cover. These percentages are slightly below actual tree coverage as they do not include single trees, rows, or small groups of trees.

Baseline environment: detailed corridor study

Designations

18.10 Any tree, group of trees or woodland can be protected from felling, pruning or damage, either by their location within a designated Conservation Area or more specifically by a Tree Preservation Order. These are administered by the local authority. In the case of felling trees in woodlands there may be a requirement to obtain a Felling Licence from the Forestry Commission. There are exemptions to these where planning permission is gained.

18.11 The tree officers for Wrexham County Borough Council, Oswestry Borough Council and North Shropshire District Council were consulted in August 2007 about the proposed overhead line route with respect to TPO's and Conservation Areas. Maps indicating an 80 metre wide corridor, within which the proposed route would be sited, were provided to Wrexham and Oswestry Councils. A verbal description of the 550 metre section of the route corridor that passes through a small part of North Shropshire was given to their tree officer.

18.12 There were no TPO's or Conservation Areas within the proposed route corridor.

Field survey method and extent

18.13 At the time of field survey, the exact positioning of the line and support poles had not been determined. These will be positioned within a **tolerance corridor** of 80m width. Stays to supports may extend outside this corridor by an estimated maximum of 5m. Additionally, any trees which could potentially fall over and land within this corridor (but are situated outside it) also needed to be considered, as this might affect safety clearances for conductors. A further 20m on each side was therefore surveyed, giving a total **arboricultural survey corridor** width of 130m.

18.14 Survey data collected was adapted from the British Standards defined in BS5837 (2005), 'Trees in relation to construction – Recommendations'. The data was collected separately for trees and tree groups, as follows:

- Species
- Height
- Maximum crown spread
- Condition
- Age
- Diameter of trunk (only for individual trees)
- BS Quality category (A, B, C or R - see explanation below)
- Safe useful life expectancy
- Potential for protected species roosting (bats, owls).

18.15 The BS Quality Category is based on the recommendations of Table 1 within BS5837(2005). This categorises trees and groups as follows:

- Category A – Trees and groups of high quality and value
- Category B – Trees and groups of moderate quality and value
- Category C – Trees and groups of low quality and value
- Category R – Trees and groups unsuitable for long term retention.

18.16 Data was collected in the field using hand held computers with GIS mapping software and OS landline information. Positional information was obtained from a backpack-mounted GPS. Tree heights were determined using a laser hypsometer. This handheld unit allows the heights of trees to be determined accurately even when access cannot be gained to the base of a tree.

18.17 Surveying was carried out during October 2006, March, April and July 2007, and in October 2008. Weather conditions varied between days of good sunshine to overcast days to rainy days. Surveying was not carried out in heavy rain due to impairment of equipment functioning.

18.18 Further detail is provided in Appendix 18A: Arboricultural survey method.

Results of survey

18.19 The results are shown at 1:5,000 scale on Figures 18.1 to 18.16. Details of the trees and groups are given on the accompanying schedules, Appendices 18B and 18C. This information was taken into consideration during detailed line design. The 80 metre tolerance corridor covers an area of 1,630,000 m^2.

18.20 Trees and tree groups were numbered in the order in which they were surveyed. As not all the trees and groups surveyed fall within the proposed route corridor (for example, surveys were undertaken of alternative route alignments), the numbering within the schedules does not follow sequentially.

Numbers of trees and tree groups potentially affected

18.21 547 trees and 140 groups were mapped initially along the proposed route survey corridor. Analysis of the survey data showed that there were 398 trees and 97 tree groups within, or potentially able to fall within, the 80 metre tolerance corridor. Table 18.1 details the numbers of trees and groups according to their BS5837 quality category.

Table 18.1: Number of trees and groups within (or having potential to fall over within) tolerance corridor, according to BS Quality Category

	BS Quality Category				Total
	A	B	C	R	
Trees	73	221	90	14	398
Groups	3	46	48	0	97

18.22 Tree groups occupy an area of approximately 61,000 m^2. In some instances, the tree group extended beyond the distance at which trees could potentially fall within the tolerance corridor. In these situations, only those areas or parts of tree groups within potential falling distance have been counted.

18.23 Tree groups crossed by the corridor vary in size from a few grouped trees to a wooded area of over 30,000 m^2. The majority of groups are small, with most covering less than 2,000 m^2. Groups include areas where the tree cover is not continuous.

18.24 Canopies of individual trees add a further 50,773 m^2 to the overall tree coverage within the corridor (assuming all trees have balanced crowns; in reality some trees may have smaller, asymmetrical crowns).

18.25 The trees and tree groups combined cover an area of 92,359 m^2 - a tree cover percentage of some 5.6% - indicating that the tolerance corridor selected for the overhead line route has a lower level of tree cover than either the wider study area, county or national levels. This would be expected, as the route has been selected to avoid effects on woodlands generally.

Characteristics of trees

18.26 The predominant tree species surveyed was oak. Most are mature trees, of heights between 15 and 20 metres, in good condition, with a quality category usually of A or B. Other individual tree species within the tolerance corridor were mostly ash, sycamore, willow and alder. Tree species within tree groups included the above, plus several other native broadleaved species, namely: birch, blackthorn, cherry, elm, field maple, hawthorn, hazel, holly and poplar. Tree heights vary between 4 and 24 metres, though the majority of groups, like the individual trees, comprise mature trees. The predominant quality categories are B and C.

Assessment of magnitude of effect

18.27 There is no prescribed method for assessing impact of development upon trees and woodlands. Direct effects are defined as those which require the removal of trees (or lopping of parts), or parts of woodland in order to maintain minimum safety clearances from the proposed overhead line. Indirect effects, such as the effects on nature conservation (potential for trees to contain bat roosts), or the effects on landscape character and views, are considered within other chapters.

18.28 To assess the potential direct effects upon trees and woodlands, the 'optimised proposed route', (as described in Chapter 11: The Proposed Route), has been superimposed upon detailed tree survey plans, and the effects described below. As a tolerance corridor of 80m width, reduced in certain locations to avoid effects on environmentally sensitive areas, is sought for the proposed overhead line, the effects described are indicative. There is a presumption in routeing of overhead lines that woodlands and the highest quality trees are avoided where possible, so it is highly unlikely that effects would be significantly worse than described should minor modifications to the route, within the tolerance corridor, be necessary.

The tree management works zone

18.29 Recommended safety distances between trees and electricity conductors are produced by the Energy Networks Association ("Overhead Line Clearances", ENA Technical Specification 43-8, issue 3, 2004). There are different clearances relating to the voltage of the overhead line, falling distances of trees, and whether or not the tree(s) are capable of supporting a climber or a ladder.

18.30 For 132kV lines, the minimum safety clearance for trees falling towards a line with conductors hanging vertically (i.e. no account is taken of conductor swing) is 1.4m plus the tree falling distance. Falling distance is the distance the top of the tree could reach if the tree failed at its base, and is equivalent to tree height. However, this distance does not incorporate an allowance for safe working on trees to reduce growth, which typically for this type of installation would be carried out at 2-yearly intervals. In order to allow for safe working, a vicinity zone is established around a live conductor. The vicinity zone is an area around a live conductor that must not be breached by any part of the body or un-insulated tool. The distance of the vicinity zone on a 132kV line is 3.5metres (specified in ENA Engineering Recommendation G55/1 "Safe tree working in proximity to overhead electric lines", 2000).

18.31 This greater distance has been used for the purpose of impact assessment. As the conductors are positioned a maximum of 3m from the centreline, this translates to a zone of 6.5m width (3m + 3.5m) either side of the centreline. If any tree or tree group has a falling distance within this zone (termed the '**tree management works zone**'), it has been assumed that works will be needed to the tree/tree group. Works comprise either felling of trees or lopping to reduce height/remove branches.

18.32 The falling distance of the vast majority of trees within this survey is unlikely to change significantly over a 2 year period, as for mature and semi-mature trees most growth will be outwards, rather than upwards.

18.33 Whilst the previous sections have described the overall stock of trees within the tolerance corridor sought for the overhead line, the following sections describe the effects of a single alignment, the optimised proposed route, within that corridor.

Description of effects

18.34 Appendices 18D and 18E detail the trees and tree groups which fall within the zone where tree management works are likely to be necessary, based upon the optimised proposed route. These schedules can be cross referenced with detailed arboricultural survey plans, Figures 18.1 to 18.16 inclusive. Also given within the schedules are details of tree species, height, condition and quality category.

18.35 In total, it is anticipated that the optimised proposed route would affect 119 individual trees and 37 tree groups. The area of the tree groups affected is 13,430 m^2.

18.36 It is important to note that these figures represent any effect upon trees, and do not quantify the trees/areas to be felled. The number and area which would need to be felled is likely to be considerably less than this, and would be determined at a more detailed design stage. For example, there would be a presumption to minimise effects upon the best quality/most valuable trees, and a presumption to carry out tree surgery rather than felling.

18.37 Table 18.2 identifies the trees and tree groups likely to be affected according to their quality category/value.

Table 18.2: Trees within the tree management works zone around the optimised proposed route

Quality Category	Number of individual trees	Number of tree groups	Area of tree groups (m^2)
A	24	-	-
B	63	15	5,301
C	24	22	8,129
R	8	-	-
Total	119	37	13,430

18.38 Individual trees affected consist of 65% oak, 11% ash, 9% sycamore and 4% alder. The remainder is a mix of smaller native species. Tree heights range from 5m to 28m, with 14m or 18m being the most common. The majority are mature trees, mostly in good or fair condition. Almost half have medium potential for protected species habitat, with 20% having a high potential.

18.39 Tree groups within the management work zone predominantly consist of alder (14%), ash (11%), hawthorn (10%) and oak (10%). The tallest trees in the tree groups range from 4 to 24m with approximately 10% being over 20m tall. Over half of the tree groups comprise mature trees, and most tree groups are in good or fair condition. Almost half of the tree groups have low potential for protected species habitat, with less than 3% having a high potential. These figures mostly relate to mature trees.

Summary of main effects on trees and tree groups

18.40 Through the overhead line route of 20.3km length, woodlands of all types have generally been avoided. There are two instances where a woodland is crossed, necessitating felling of a safety clearance corridor. These are at Bramble Wood, an area of mature woodland (also designated Ancient Semi Natural Woodland) on the upper eastern slope of the Ceiriog valley, and in crossing a young plantation woodland immediately south of the River Perry.

18.41 Bramble Wood is located on the upper eastern slope of the Ceiriog valley. The linear strip of ASNW, approximately 100m width by 600m length, is contiguous with areas of ancient replanted woodland to the north, and undesignated woodland to the south.

18.42 Crossing Bramble Wood, it is anticipated that the overhead line will partially occupy an existing clearance corridor created for an underground pipeline some years previously. The ASNW woodland belt is some 70 metres width in this location. Approximately 1,000m^2 of woodland falls within the tree management works zone (parts of groups G19, G20, G138 and G139), predominantly early mature and young woodland of quality category C.

18.43 Crossing of the young plantation woodland south of the River Perry will involve a maximum distance of 130 metres and minimum distance of 90m, which to create a safety clearance corridor (sufficient to ensure no trees will fall or grow into the safety clearance zone around conductors) will require management of an area of approximately 4,000m^2 of woodland. This young woodland (G160) comprises a plantation of poplar, alder, cherry, birch and oak species, of quality category C.

18.44 In addition to these two areas, the proposed route crosses five streamside/riverside woodland strips in the following locations (described from north to south):

- Crossing Gefieliau Brook, north of Park Eyton, a tree group adjacent to the brook (G25) will be substantially affected – all 679m^2 of this group falls within the tree management works zone;
- On a tributary of the River Dee, south of Black Wood (Moor Wood County Wildlife Site)(tree groups G27 and G30) – affecting a total of 1,000m^2 of woodland;
- Riverside woodland on both banks of the River Dee (G211 – affecting just under 1,000m^2 of woodland, on the north bank and G192 and G193 on the south bank, affecting 300m^2 of woodland. G192 is the only tree group within the tree management works zone with quality category A trees);
- Riverside woodland on both banks of the River Ceiriog (G16, G49 and G135) – affecting approximately 800m^2 of woodland;
- River Perry streamside woodland (G154 and G155) – affecting approximately 562m^2 of woodland.

18.45 Management to approximately 600m^2 of mature woodland on the northern fringe of Hafod community park will also be necessary to ensure safety clearance for conductors (G101).

18.46 A further 2,000m^2 of woodland will require management works in the vicinity of Nant-y-Belan and Prynela Woods, immediately north of the River Dee (Tree groups G8 and G205). Whilst the optimised proposed route alignment exploits a gap between these two tree groups, the tree management works zone encompasses the edges of both tree groups.

18.47 Of the 119 individual trees affected, over half are mature oaks. There are likely to be greater concentrations of individual trees affected in the vicinity of Gyfelia, north of Park Eyton, and in the area south of The Drive Wood, Wynnstay Park than, for example, the area between the Shropshire Union Canal and the southern termination point of the overhead line. This relates to the relative abundance of trees in these areas. The area around Gyfelia and north of Park Eyton comprises relatively small fields with numerous hedgerow trees, whilst the area around Rhos y Gadfa has relatively large fields, with few individual trees.

Proposed mitigation

18.48 There are several mitigation measures proposed to reduce any adverse effects on trees and woodlands, the primary measure being avoidance through route design. Other measures include:

- Felling and lopping the minimum number of trees to facilitate construction and operation;
- Encouragement of natural regeneration of low growing shrubs within wayleave corridor;
- Tree surgery to individual trees that may require felling or cutting back would be undertaken by specialist arboriculturalists, and would where necessary be undertaken at a time to minimise the disruption and disturbance to bats and nesting birds;
- Replacement of trees/woodland areas removed, in positions set away from the immediate line of the proposed overhead line, subject to the landowner's agreement. Species selected would reflect those occurring locally.

Summary

18.49 This chapter describes the likely magnitude of the effect of the proposal upon individual trees and tree groups. Significance is described in other chapters.

18.50 The study area has 9.5% woodland cover, which is similar to the overall levels of woodland cover in the wider context of the counties of Shropshire and Wrexham.

18.51 There are 398 trees and 97 tree groups within, or potentially able to fall within, the 80 metre tolerance corridor within which the overhead line will be sited. These cover an area of 92,359 m^2, which represents 5.6% tree cover. The tolerance corridor selected for the overhead line route has a lower level of tree cover than either the wider study area, county or national levels. This would be expected, as the route has been selected to avoid effects on woodlands generally.

18.52 Applying a 'Tree Management Works Zone' around the line of the optimised proposed route through the tolerance corridor has enabled identification of the effects upon trees and tree groups. In total, it is anticipated that the optimised proposed

route would affect 119 individual trees and 37 tree groups. The area of the tree groups affected is 13,430 m^2. Not all the trees and tree groups affected require felling; some may only require management to ensure safety clearances are maintained.

19.0 EFFECTS ON RECREATION AND TOURISM

Introduction

19.1 This chapter considers any likely significant effects of the proposed overhead line on recreation and tourism, and identifies measures which would be taken to mitigate any significant effects, where practicable.

19.2 An inventory of recreation and tourism within the Study Area has been provided in Chapter 7: Study Area Inventory. The main recreation and tourist facilities are indicated on Figure 7.11: Recreation and Tourism.

19.3 The proposed overhead line is routed to avoid most of the identified recreational and tourist activities within the Study Area, although several linear recreational routes such as footpaths, bridleways and cycle routes are crossed. In particular, the proposed overhead line would cross the Maelor Way footpath, the recently opened (August 2008) Wat's Dyke Way, the Shropshire Union Canal (Llangollen branch) and Regional Cycle Route 31. It would also cross the rivers Dee and Ceiriog in an area where angling is an important outdoor pursuit. Consultations with landowners have identified the location of the River Dee crossing as an area where two pheasant shooting syndicates operate.

19.4 The route also passes within close proximity to Hafod Community Park, near Rhosllanerchrugog, which is an accessible area of informal open space created on the elevated landform of the former Hafod colliery tip. Park Hall Countryside Experience, a visitor attraction comprising a farm of some 130 acres, near Oswestry, is located immediately south of the proposed overhead line route. Derwen Enterprises, a visitor attraction related to Derwen College, near Oswestry, is located north of the proposed line.

19.5 In addition to these recreational facilities, the area through which the proposed overhead line passes has a comprehensive network of public rights of way. Excluding the Maelor Way and the Shropshire Union Canal towpath, the route crosses 24 public rights of way, as identified from Ordnance Survey “Explorer” maps (considered by both Wrexham County Borough Council and Shropshire County Council to be more up to date than the available Definitive Map of Public Rights of Way).

Potential effects

19.6 The effects on recreation and tourism are primarily related to people’s enjoyment and appreciation of the countryside, such as effects on views to and from recreational resources. There may also be direct physical effects resulting from the proposed overhead line crossing a specific recreational facility.

19.7 Potential effects upon tourism and recreation include the necessity for footpath diversions/re-routeing, either temporarily or permanently, restrictions on angling and pheasant shooting, disruptions to tourist routes and effects on the setting of tourist destinations, particularly where attention is focussed on the landscape (e.g. National Trust sites, historic parks and gardens).

Evaluation criteria

19.8 The following table sets out the evaluation criteria for the level of significance in terms of effect on the recreation and tourism facilities within the study area. Any effect

judged to be either major or moderate will be considered to be 'significant' within the terms of the Electricity Works (EIA) Regulations.

Table 19.1 – Significance of Effects upon Recreation

Significance	Definition
Major	Where the extent of effects on activities, resources, or the local population is large in scale or magnitude, and a large number of people or activities will be affected.
Moderate	Where the extent of effects on activities, resources or the local population is small in scale or magnitude, but a large number of people or activities will be affected. Or alternatively: Where the extent of effects on activities, resources or the local population is large in scale or magnitude but only a small number of people or activities will be affected.
Minor	Where the extent of effects on activities, resources or the local population is small in scale or magnitude, and will only affect a small number of people or activities.
None/Negligible	Where the extent of effects on activities, resources or the local population is negligible or non-existent.

Impact assessment

Shropshire Union Canal

19.9 This has been identified through consultation as one of the important features of the area. The Llangollen stretch of the canal is well used, and visitor numbers are likely to increase with increased recognition of the Pontcysyllte Aqueduct and Canal World Heritage Site Nomination. The designation site is located 3 km north of the proposed crossing point of the canal.

19.10 The proposed overhead line would cross the Shropshire Union Canal at an oblique angle, some 320 metres north of New Marton Bridge. There are groups of trees of around 12-14m height (probably a result of overgrown hedges) on both sides of the canal at this point, which will aid screening of views of supports from along the canal in either direction.

19.11 The visual effect has been described in Chapter 13: Visual Effects, from Viewpoint 23, looking north from New Marton Bridge. The effect would be moderate from this point, and would decrease with increasing distance, particularly as the bridge and adjacent locks complex form a barrier to views northwards from further south.

19.12 The proposed overhead line would form an element in views generally from the canal or towpath from west of Pen y bryn to east of Rhosygadfa (a distance of approximately 1km). The canal occupies a wide, shallow north-south valley, the slopes of which are visible to canal users. The valley itself is relatively open, with lines of trees along ditches in places. As the overhead line crosses the valley, there will be a degree of intermittent screening provided by these tree groups, which will have the effect of 'breaking up' the view of the line. Surrounding higher ground also provides an element of backgrounding. As views from this section of the canal are

generally expansive and far-reaching, the proposed overhead line will form only a small element of a wider scene.

19.13 Wood pole supports near the crest of the slopes will be more visually prominent and form features above the horizon and general tree/hedgelines. South of the canal crossing point, the proposed overhead line occupies a route below the top of the valley side, and one or two fields distant from the canal. Both the position below the crest of the slope, and the presence of field boundary trees and hedges, will aid assimilation and reduce effects on views from the canal.

19.14 Existing low voltage overhead power lines cross along this stretch of the canal at irregular intervals; they are a familiar and entirely unremarkable feature of the rural landscape.

19.15 During construction there may be some temporary restrictions on use of the canal towpath. Use of the waterway itself would not be affected, as conductor stringing would take place once netting suspended between scaffolding supports had been erected over the canal.

19.16 In summary, an additional crossing would have a **negligible** impact upon use of the canal by tourists, although it is appreciated that there may be a slight reduction in their visual amenity in the vicinity of the overhead line. During and immediately after construction the overhead line would be a noticeable feature to those familiar with the area, primarily because it is a change in the scene. The effect of the proposal upon this resource would not be significant.

Maelor Way

19.17 This recreational footpath, 39kms in length, follows the southern banks of the rivers Ceiriog and Dee, from south of Chirk Castle (where it connects to Offa's Dyke Path), to Grindley Brook (east of Erbistock).

19.18 The proposed overhead line would cross the footpath at right angles, where the path follows the eastern edge of Bramble Wood, on the upper eastern side of the Ceiriog valley. A gas pipeline has recently been installed on a similar alignment, creating a gap in the woodland. The proposed line would exploit this gap, and though there might be a need for additional tree removal or lopping, this would widen the existing gap, rather than create a new one, and hence be a less noticeable change in the landscape. It is likely that a wood pole support would need to be sited close to the edge of the wood, and consequently close to the Maelor Way, for technical reasons due to the topography (the footpath follows the top of a steep slope).

19.19 Similarly to the canal, the Maelor Way is crossed at irregular intervals by overhead power lines. An existing 132kV high voltage power line, supported on steel lattice towers, follows the Ceiriog valley in this vicinity and crosses the Maelor Way some 250m to the north of the proposed route crossing.

19.20 The overall effect of the proposed overhead line on users of the path would be **negligible** and of a very transient nature. It is possible that the footpath would need diverting temporarily during construction for safety reasons, resulting in a greater temporary and highly localised effect. The effect of the proposed overhead line on this resource would not be significant.

Wat's Dyke Way

19.21 This 99km long distance footpath runs between Llanymynech and Holywell, where possible following Wat's Dyke. The proposed overhead line would cross this path in three locations, namely:

- Near Black Brook Bridge, Gyfelia
- In the vicinity of Rhosymadoc, south of Wynnstay Park
- Where the path follows the eastern edge of Bramble Wood, on the upper eastern side of the Ceiriog valley (Wat's Dyke Way follows the same route as the Maelor Way in this vicinity).

19.22 These crossings of the path are at intervals greater than 2 kilometres apart.

19.23 The overall effect of the proposed overhead line on users of the path would be of a very transient nature and **negligible** and therefore not significant.

Regional Cycle Route 31

19.24 Regional Route 31 is a 28 mile signed route utilising quiet lanes between Oswestry, Gobowen, Ellesmere and Whitchurch. The proposed overhead line would cross the route between Iron Mills and Hindford, and further south follow a similar alignment to the cycle route, but one field distant, for approximately 1 km between the River Perry and the B5009 Gobowen Road.

19.25 The cycle route follows narrow, winding lanes lined with tall hedgerows through an undulating landscape made up of a mosaic of woodlands, pasture and arable fields in this vicinity, which is already crossed by several low voltage lines. A new wood pole mounted line will be a relatively minor feature within this complex landscape. It is anticipated that cyclists' attention will primarily be focussed on the lane and traffic conditions. The presence of a new overhead line is unlikely to have any effect upon users of the cycle route after construction.

19.26 If diversions are required during construction, this may have a temporary negative effect upon route users (likely to add distance and possibly require use of busier roads). Overall, the effect on this resource is considered **negligible** and not significant.

Angling

19.27 Overhead power lines can represent a major hazard to anglers, both at the site of fishing and along pathways to such sites where assembled fishing tackle is often carried. The primary angling sites along the proposed overhead line corridor are the rivers Dee and Ceiriog and the Shropshire Union Canal. In addition to these watercourses, some farmers allow angling in field ponds.

19.28 Rhostyllen angling club uses Big Ben Pool, near Middle Sontley. This is located 0.5km from the proposed route.

19.29 Ceiriog Fly Fishers angling club uses the River Ceiriog between Pontfadog and the River Dee (both banks).

19.30 The effects of the proposed overhead line on the angling resource are predicted to be highly localised, **minor** and not significant.

19.31 SP Manweb has an obligation under both the Electricity Regulations and the Health and Safety at Work etc. Act 1974 to provide signs to warn people of risks to their health and safety. SP Manweb will provide warning signs of the hazard of fishing close to the electrical overhead line points where the proposed line crosses known angling sites. Local angling clubs with responsibility for these stretches/waters will be informed when the overhead line is erected.

Pheasant shooting

19.32 Newbridge Shooting Syndicate is made up of 10 guns, 8 of which shoot on any given day. The land over which the syndicate shoots, and which could potentially be affected by the proposed overhead line, comprises Halton Wood and the land east of this, south of the River Dee.

19.33 Coedleodd Isaf Shoot has 4 guns in the syndicate and they shoot 7 guns by inviting 3 guests on each occasion. The area potentially affected by the proposed overhead line comprises land between Coedleodd Woods and the River Dee.

19.34 Discussions have been held between syndicate managers and SP Manweb representatives in order to ascertain the directions of the pheasant drives and the gun positions.

19.35 The proposed route, which has been locally adjusted in this vicinity from the preferred route shown at public consultations, will allow the syndicates to continue to shoot the same drives. There may be some temporary disruption to shoots during construction, and the presence of an overhead line may have a negative effect upon the overall recreational experience. Overall, the effects of the proposed overhead line upon this recreational interest are predicted to be **minor** and not significant.

Public Rights of Way

19.36 The proposed route crosses 26 public footpaths, as identified from Ordnance Survey 'Explorer' maps, inclusive of the Maelor Way and Shropshire Union Canal towpath. Whilst the effect upon users may be moderate immediately under the crossing point, the overall effect of the proposal on using the footpath/bridleway network is **minor** and is not considered significant.

19.37 Table 19.2 below identifies the public rights of way crossed by the proposed overhead line, listed in the order in which they are encountered when travelling along the overhead line route from Legacy (north) to Oswestry (south). The location given is the point at which the proposed overhead line would cross the right of way.

Table 19.2 Public rights of way crossed by proposed overhead line

Ref.	Description	Location	Type
1	Corkscrew Lane – Hafod y bwch	SJ 308474	footpath
2	Corkscrew Lane – A483(T)	SJ 311473	footpath
3	Hafod House – Wat's Dyke	SJ 317462	footpath
4	Black Brook Bridge – Pentre-clawdd	SJ 320454	footpath
5	Clwyt – Moreton Below	SJ 322451	footpath
6	Moreton Below – Gefeilau Terrace	SJ 325448	footpath
7	Moreton Farm – Gyfelia to Cinders lane (west of Crymbal Farm)	SJ 326445	footpath
8	Gyfelia to Cinders lane – Crymbal Farm	SJ328442	footpath

Ref.	Description	Location	Type
9	Footpath connecting Gyfelia to Cinders lane to Park Eyton/Crabtree Green lane	SJ330439	footpath
10	A539 (near Cae-gwydd) – Bryn House	SJ331430	footpath
11	School Lodge, Wynnstay Park – Back Lodge, Pen-y-lan	SJ 321422	footpath
12	Rhosymadoc - Back Lodge, Pen-y-lan	SJ 320419	footpath
13	Pont Llygoden – Green Lane, Halton	SJ 314391	footpath
14	Maelor Way (alongside Bramble Wood)	SJ 316386	footpath (recreational route)
15	Maelor Way – Pen y Bryn	SJ 317384	footpath
16	Pentre – New Ifton Farm	SJ 323379	footpath
17	B5069 (N of Gilrhos) – Little Ifton	SJ 328375	footpath
18	Mount Bradford Lane – B5069 (N of Yew Tree Farm)	SJ 331373	footpath
19	B5068 near fishing pond – Upper Wigginton	SJ 333366	footpath
20	Upper Wigginton – lane to Glan-y-wern	SJ 329356	footpath
21	Lane to Glan-y-wern – Shropshire Union Canal	SJ 327353	footpath
22	Shropshire Union Canal – lane south of Wigginton Hall	SJ 326352	footpath
23	Shropshire Union Canal towpath	SJ 326351	towpath
24	The Pynt – New Marton Bridge (Shropshire Union Canal)	SJ 326348	footpath
25	Bronygadfa Farm – New Marton Lock	SJ 326347	Road used as PROW
26	Henlle – Top House Farm, Rhosygadfa	SJ 324337	footpath

Hafod Community Park

19.38 Hafod Community Park is being developed on the former Hafod spoil heap, and comprises some 90 acres. The park features a substantial hill (called Picnic Mountain) formed by the spoil heap, which offers opportunities for long distance views. Except for the summit, the hill is covered by young woodland.

19.39 The proposed overhead line would skirt around the park, on flat land to the north and east. The effect upon views from within the park has been assessed in relation to Viewpoints 33 and 34 as minor or negligible. Construction would not affect access to the park (the car park is off Hafod Lane, to the south of the hill). There are therefore considered to be **negligible** or no effects on the recreational use of the park.

Park Hall Countryside Experience

19.40 Park Hall Farm is situated north of Oswestry, between Oswestry showground and the orthopaedic hospital. It is a visitor attraction primarily aimed at families, with extensive indoor and outdoor farm-related activities. Its northern extents are marked by two plantation woodlands, Sycamore Plantation and Alder Plantation. Visitors are encouraged to use nature trails through these areas. A ‘maize maze’ extends further north than the adjacent plantation, but would not be impinged upon by the tolerance corridor sought for the proposed overhead line.

19.41 The proposed overhead line would follow an east- west alignment between North Drive, Twmpath, and the A5(T), some 100 metres north of the Park Hall farm woodlands. In this vicinity the overhead line crosses flat, open farmland.

19.42 It is likely that the overhead line would form a minor component of views northwards from within the farm park, particularly from its northern fringes. It would have a **negligible** effect upon the overall recreational experience, and is consequently not considered significant.

Derwen Enterprises

19.43 Derwen Enterprises is a training centre for young people aged 19+ with learning difficulties and disabilities, located just south of Gobowen, adjacent to the orthopaedic hospital. Craft workshops are open to the public, and there are other visitor facilities including a garden centre, coffee shop, putting and bowling greens and walled garden.

19.44 The proposed overhead line would follow a northeast -southwest alignment, 200m south of the main visitor facilities. Views southwards from the site are relatively open, over a minor road and flat farmland towards Oswestry, with rising hills in the distance. The overhead line would form a component of such views, but would otherwise have **no effect** upon the recreational facility, and is consequently not considered significant.

Mitigation

19.45 Careful routeing of the proposed overhead line is the main mitigation measure. Wood poles are, wherever possible, located next to hedgerows and close to woodlands in order to provide a degree of screening.

Conclusion

19.46 The main effect of the proposed overhead line on recreation and tourism occurs where the line crosses recreational routes but, in general, these effects are considered **minor** and not significant**.** This is due partly to the scale of the proposed line and partly to the ability of the landscape to assimilate the structures and prevent extensive views.

19.47 Careful routeing to avoid specific recreation and tourist facilities has prevented direct effects upon the majority of identified resources.

20.0 EFFECTS ON MINERAL RESOURCES AND LANDFILL SITES

20.1 This chapter considers any likely significant effects of the proposed overhead line on mineral resources and landfill sites, identifying measures that would be taken to mitigate any significant adverse effects, where practicable.

20.2 The distribution of known mineral resources and landfill sites within the wider study area is shown on Figure 7.12: Mineral Resources, and described in Chapter 7: Study area inventory.

Potential effects

20.3 Mineral resources and landfill sites would be affected only if the proposed overhead line passes directly over the identified areas or access routes. Sterilisation of a mineral resource occurs when either the positioning of a pole inhibits the potential for mineral extraction or where the cost to the developer of moving a power line, either permanently or temporarily, to extract the mineral below the line by open cast measures, makes extraction uneconomic.

20.4 The potential effects applying to former landfill sites include the potential for contamination or emissions through the construction of the line. Landfill sites are also potentially unstable, and supports might require additional groundworks, the nature and scope of which would require investigation.

Evaluation criteria

20.5 There are no established criteria for evaluation of effects upon mineral resources or landfill sites. Effect has been categorised as follows:

- Major – a fundamental change to the environment
- Moderate – a material but non-fundamental change to the environment
- Minor - a detectable but non-material change to the environment
- None – no detectable change to the environment.

20.6 Any effect of the proposal judged to be either major or moderate will be considered to be ‘significant’ under the terms of the Electricity Works (EIA) Regulations.

Effect on mineral resources

20.7 Within Wrexham, the proposed overhead line would cross an area where mineral resources are protected, for a distance of approximately 500m, between the B5605 and A483(T), north of Rhosllanerchrugog (Wrexham CBC Policy MW9).

20.8 Within Shropshire the proposed overhead line would cross a minerals consultation area along the eastern side of the Ceiriog valley, and skirt around the edge of a consultation area in the vicinity of Gobowen. The extent of the route within the minerals consultation area comprises 500m.

20.9 The area between the Wrexham-Shropshire border (marked in this vicinity by the rivers Dee and Ceiriog) and St Martin’s is also identified in Shropshire Minerals Local Plan as a coal consultation area. The proposed overhead line would pass through this zone for a distance of 4–5 km (this distance is approximate due to the diagrammatic nature of the coal consultation area plan). The area immediately north of Oswestry is also identified as a coal consultation area. The proposed route would cross this area as underground cable.

20.10 Presence of potential mineral resources is not a key routeing criterion and consequently resources have not been specifically avoided. There is no certainty that potential resources will be exploited or when, and extraction can typically accommodate existing overhead transmission. The future presence of distribution infrastructure would be a consideration of very low relevance in determining any application to win minerals in advance of line construction, although extraction companies may make applications.

20.11 The magnitude of effect on mineral resources is related to the footprint (land area) required for the overhead line. This would be very small, comprising the support pole locations only. The proportion of the resource directly affected would therefore be extremely low. An indirect effect may be caused by the conductors, which could pose a constraint upon extraction activities. As a proportion of the overall resource, this is considered to be a small scale of effect.

20.12 The effect upon mineral resources is of **minor** significance, and could be adequately mitigated. Should the proposed overhead line represent a constraint to minerals extraction, SP Manweb would enter into discussions to divert the affected length of the line, either temporarily or permanently.

Effect on landfill sites

20.13 The proposed overhead line would not cross any known landfill sites. It would pass within 500m of two historic landfill sites to the east of St Martin's as shown in Table 20.1 below. There are not anticipated to be any direct or indirect effects upon these landfill sites, and there is no potential for contamination or emissions through construction of the overhead line. There would be **no effects** upon these or other known landfill sites within the study area.

Table 20.1 Licensed landfill sites within 500m of proposed route

Landfill site	Location	Landfill material	Distance from proposed overhead line
Mount Bradford Farm, St Martin's	SJ 3330 3690	Household – general refuse and ashes. Operational prior to the provision of Pollution Act 1974	170m
Pool Area – Old Brickworks, Pentre Morgan, St Martin's	SJ 3390 3700	Household waste. Operational prior to the provision of Pollution Act 1974.	400m

Conclusions

20.14 The proposed overhead line would cross areas where mineral resources are protected, and where consultation is required for development. Direct effects on resources are minor and not significant.

20.15 The proposed overhead line would not have any effects upon known landfill sites and no specific mitigation measures are required.

21.0 EFFECTS ON INFRASTRUCTURE

21.1 This chapter considers any likely significant effects of the construction and operation of the proposed overhead line on infrastructure in the study area. Infrastructure includes roads, railways and other services (telephone lines, pipelines, low voltage electricity lines etc.). Measures are identified that would be taken to mitigate any significant adverse effects.

Distribution of infrastructure in relation to the proposed route

21.2 An inventory of the main infrastructure within the study area is provided in Chapter 7: Study Area Inventory, and illustrated on Figures 2.2, 7.2 and 7.3.

21.3 Infrastructure which the proposed line would cross over or under could be directly affected. The proposed line would cross over three 'A' roads and many minor and unclassified roads in the study area. It would cross the Shropshire Union Canal (Llangollen Branch) in the vicinity of New Marton. The main line railway between Chester and Shrewsbury would be crossed at two points, near Legacy and south of Gobowen. The proposed overhead line would terminate (transfer to underground cable) immediately prior to crossing a former branch of the Chester to Shrewsbury rail line between Gobowen and Oswestry where it crosses the A5 north of Oswestry This branch was closed in 1966.

21.4 National Grid has a network of high pressure gas distribution pipelines present in the study area. The proposed line would cross pipelines in this network in two locations, between Hafod Community Park and the A483(T), and in the vicinity of Wigginton, near St Martin's. It would utilise an existing wayleave corridor through woodland on the eastern side of the River Ceiriog valley, which was created for the recently constructed Overton to Chirk National Grid Gas pipeline.

21.5 The proposed line would also cross high voltage power lines in three locations, crossing both a 400kV line and 132kV line north of the Dee valley, and crossing the same 132kV line immediately east of the Ceiriog valley. In addition, the proposed overhead line would cross over a number of existing low-voltage electricity distribution lines, together with British Telecom underground and overhead plant.

21.6 Public sewers and water mains are not considered important at routeing stage, but SP Manweb have consulted with the relevant authorities prior to further design development of the proposed overhead line, in order that services locations are not affected. In addition, private sewage facilities such as septic tank outlets could possibly be encountered along the proposed route corridor. Consultations with the owner/occupier of each property would be undertaken to determine the exact nature and location of each sewage system and exact route of water pipes which could potentially be affected by the proposed development.

Potential effects on infrastructure

21.7 SP Manweb would carry out all construction activities with care and take all practicable measures to avoid damage and/or disruption to all known existing services encountered.

21.8 The effects during the erection of the poles would be unlikely to cause any disruption or inconvenience, unless it was not possible to cross any existing service without breaching the pipeline/duct/overhead line. If an existing service required breaching,

suitable arrangements would be made with the service owner(s) to minimise the disruption/inconvenience.

21.9 Where the proposed overhead line crosses roads, railways, waterways, other electricity lines or telephone wires, precautionary works would be completed before conductor stringing could commence. Any contractors working in the vicinity of overhead lines would comply with the Health & Safety Executive Guidance Notes dealing with the avoidance of damage from overhead electric lines.

21.10 Where the overhead line runs parallel to electrified railways, overhead power lines and underground pipelines, adequate separation has been designed to contain longitudinal induced voltages.

21.11 The necessary precautions to be undertaken in the course of constructing and dismantling the proposed overhead line have been set out in detail in Chapter 4: Project Characteristics.

Effect on roads

21.12 The proposed overhead line would cross above a number of roads. There is no requirement for widening or realignment of public roads.

21.13 In order to minimise interference to traffic, the relevant highway authority would be notified of all construction and dismantling work which might cause disruption. Any special measures which may be required would be agreed in advance.

21.14 During construction of the line, increased vehicle movement along minor roads in the vicinity of the pole sites could be anticipated for brief periods. These movements would be regulated to meet local conditions.

21.15 Any construction or dismantling works would be timed to avoid periods of high traffic flows and work would be undertaken in the shortest possible timescale.

21.16 Scaffolding and nets will be erected over major roads. Where necessary, approval for these crossings would be obtained from the relevant highway authority.

21.17 In operation, the line would cause no disruption or impediment to traffic.

Effect on railways

21.18 The proposed overhead line would cross the Chester–Shrewsbury main line in two places.

21.19 Scaffolding and nets will be erected prior to conductor stringing across the railway. Working practices would be agreed with Network Rail prior to construction work taking place.

21.20 SP Manweb will ensure the overhead line is built to comply with safety guidance on construction close to railways. If the line were to become electrified SP Manweb would address any changed safety requirements of this and other overhead lines at that time.

21.21 The line would cause no disruption or impediment to rail traffic in operation.

Effect on canals

21.22 The proposed overhead line would cross the Shropshire Union Canal (Llangollen branch) north of New Marton Locks, at an oblique angle.

21.23 Working and construction practices would be agreed with British Waterways prior to construction work taking place. Scaffolding and nets would be erected over the canal prior to conductor stringing, if required.

21.24 Poles used for the crossing of the canal would ensure that the minimum clearances are provided for canal traffic. There would be no significant effect on the canal during operation or eventual dismantling of the proposed overhead line.

Effect on existing electrical and telecommunication networks

21.25 The proposed overhead line would cross over a number of lower and higher voltage power lines and telecommunication lines.

21.26 The minimum clearance to low voltage lines varies according to the voltage of the line and site circumstances. Modifications may be required to some lower voltage power lines to allow construction and operation of the proposed overhead line. Where it is not possible to achieve minimum clearances to low voltage lines without having to increase pole heights, sections of the low voltage line would be deviated locally or placed underground. All telecommunication lines crossed by the proposed overhead line would also be deviated or placed underground.

21.27 The design of the line would ensure no significant effect on other overhead lines during the operation of the proposed overhead line. Where the proposed overhead line passes under existing high voltage transmission lines, the proposed line has been positioned close to an existing steel tower, thereby ensuring the maximum clearances between the two lines, and satisfying the statutory safety clearance requirements of the National Grid and Distribution Network Operators.

21.28 In each case where the proposed overhead line would cross other existing lines, SP Manweb would liaise with operators to make suitable arrangements to minimise disruption to supply during the construction period.

Effect on pipelines

21.29 There are a number of large pipelines (in use for supplies greater than domestic levels of supply) in the vicinity of the proposed overhead line. High pressure gas pipelines operated by National Grid are shown on Figure 7.3: Development allocations and consultation zones.

21.30 As far as possible the proposed overhead line would pass over these pipelines at right angles, thereby reducing the likelihood of interaction. The recently constructed Overton to Chirk pipeline is not shown on study area inventory plans. The proposed overhead line would be in close proximity to this in the vicinity of Bramble Wood, on the eastern valley slope of the River Ceiriog, utilising a wayleave corridor through the wood.

21.31 The exact position of all underground pipelines and details of all working practices would be agreed with relevant operators' statutory undertakers prior to construction work taking place.

21.32 Where the proposed overhead line crosses underground pipelines, or follows an alignment in close proximity, all requirements of the appropriate authority would be addressed. Detailed design will ensure that individual poles are sited and the route is planned to ensure that minimum clearances are provided. Construction of the line will comply with relevant Codes of Practice, Specifications and Procedures.

Conclusion

21.33 Adoption of standard working practices would ensure that periods of disruption to public roads would be minimised. Generally, operations would be timed to avoid periods of high traffic flow, and works would be undertaken in the shortest possible timescale. In addition, all necessary precautions would be adopted to ensure that disruption to existing overhead power lines, telephone lines or other overhead infrastructure are avoided or minimised, and that underground pipelines are identified and avoided in the course of the overhead line construction. The proposed overhead line would have **no significant effect** on road, rail or canal communications or general infrastructure along the route corridor.

22.0 PHYSICAL EFFECTS (EMF & NOISE)

Introduction

22.1 This chapter considers the likely significant effects from the power-frequency electric and magnetic fields and any audible noise generated in the vicinity of both the overhead line and underground cable sections. No likely significant effects are predicted.

EMF radiation

22.2 Electric and magnetic fields are produced wherever electricity is used. Electric fields are produced by voltage and magnetic fields by current. Most people get most of their exposure from the distribution underground cables along the street and from wiring in the homes. We also get short-duration higher field exposures when we pass close to electrical appliances.

22.3 In the population as a whole, not many people live close to (say within 100 m) of a high-voltage power line. But for those who do, this will also be a source of exposure. The UK Government set exposure limits for EMFs and the electricity system operated by SP Manweb complies with these (see Table 22.2). The limits are designed to prevent all established effects of fields on the body.

22.4 There are suggestions that magnetic fields may cause other diseases, principally childhood leukaemia, at levels below these limits. The evidence for this comes from epidemiology studies, which have found a statistical association - an apparent two-fold increase in leukaemia incidence, from about 1 in 24,000 per year up to 1 in 12,000 per year, for the children with the top half percent of exposures. The evidence is strong enough for magnetic fields to be classified by the World Health Organization as "possibly carcinogenic". But because these studies only show statistical associations and do not demonstrate causation, and because the evidence from the laboratory is against, the risk is not established and remains only a possibility.

22.5 As stated above extremely low frequency (ELF) electric and magnetic fields (EMF) are found virtually everywhere in our environment where electricity is used or transported. Common sources of exposure for members of the general public include transmission and distribution overhead power lines and underground power cables, electrified rail networks, appliances, and wiring to and in buildings. The background levels of electric fields and magnetic fields in residential properties are typically between 1 - 20 volts per metre (V/m) and 0.01 - 0.2 microtesla (μT), respectively. The proposed overhead lines in this project are sources of both electric and magnetic fields, whilst the proposed underground cables are sources of magnetic fields only.

22.6 **Electric fields** are the result of voltages applied to electric conductors and equipment. Most objects including fences, trees, hedgerows and buildings easily block electric fields. Therefore, certain appliances within the homes and the workplace are the major sources of electric fields indoors, while power lines and electric trains are the major sources of electric fields outdoors. Electric fields are measured in Volts per metre (V/m)

22.7 **Magnetic fields** are produced by the flow of electric currents, however, unlike electric fields, most materials do not readily block magnetic fields. The magnetic field level at any point depends on characteristics of the source and its distance from the point of measurement. Magnetic fields are measured in microtesla (μT).

22.8 Fields vary greatly from line to line and over time, and a line typically produces fields much less than the maximum of which it is capable. Table 22.1 shows typical ground-level electric field and magnetic field levels from 132kV overhead lines.

Table 22.1 Typical ground-level EMF levels from 132kV overhead lines

Voltage	Typical field at location	Magnetic Field μT (microteslas)	Electric Field V/m (volts per metre)
132kV	Directly under power line	0.5 – 2	1,000 – 2,000
	25m to side	0.05 – 0.2	100 – 200
	100m to side	0.01 – 0.04	2 – 20

22.9 There are no statutory regulations in the UK that limit the exposure of people to power-frequency electric or magnetic fields. However, the Radiation Protection Division of the Heath Protection Agency (RPD-HPA) has recommended to the Government that the UK follow the exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). See Table 22.2 below.

Table 22.2 Summary of the ICNIRP Exposure Guidelines applicable for members of the general public for extremely low frequency electric and magnetic fields in the UK

	Magnetic Fields μT	Electric Fields V/m
Basic restriction for general public	2mA/m^2 (Induced current density in central nervous system)	
Reference level (trigger for further investigation)	100μT	5,000V/m
Field corresponding to basic restriction	360μT	9,600V/m

[The basic restriction for occupational exposure is 10mA/m2 (Induced current density in central nervous system). The general public are afforded a 5-fold factor of safety]

22.10 Power-frequency field strengths near ground level in the vicinity of high voltage power lines and substations should not exceed the guidelines recommended by the ICNIRP.

Effects of electric and magnetic fields

22.11 Table 22.3 outlines the sources of possible impacts and associated effects of the proposed overhead line and underground cable. All possible field effects can be addressed by compliance with best practice and industry standards as described below.

Table 22.3 Summary of possible effects of EMFs

Source	Possible Effect
Electric Field	Field perception Radio interference Audible noise
Magnetic Field	Induction on fence wires, pipelines or other conductive objects that parallel overhead lines for long distances. Possible association with childhood leukaemia for long-term average exposures above 0.4μT.

22.12 As stated in paragraph 22.4 no causal link has been established between cancer (or any other disease) and electric or magnetic fields and indeed there is no established mechanism by which these fields could cause or promote the disease. Scientists recognise the possibility of a risk associated with high exposure to magnetic fields but it is no more than a possibility.

22.13 SP Manweb takes any suggestion of a possible health risk very seriously and the electricity supply industry is continuing to support high quality research to help gain a clearer picture of EMFs.

22.14 Given the account taken of residential properties (for general amenity reasons) in the routeing process, the levels of EMF will have diminished to typical values that are within the range of levels measured in UK residential properties. The magnetic field, averaged over 24 hours, in the majority of homes in the UK is between 0.01 and 0.2 microteslas.

Mitigation

22.15 As a result of the routeing strategy, the proposed overhead line route reflects precautionary and good practice measures to route the line away from residences and other sensitive land uses where possible. A consideration of the reviews by the World Health Organisation (WHO), other health agencies and research support the assessment provided by the Health Protection Agency (HPA) and its advisors that the evidence for an association of magnetic fields with leukaemia is inconclusive and that

> *"the epidemiological association may be due to chance, confounding factors or some unrecognized artefact related to the way the data have been collected. The review of the experimental studies gives no clear support for a causal relationship between ELF EMF and cancer" (HPA, 2008[1])*

22.16 The good practices proposed by SP Manweb are appropriate and consistent with the recommendations of the HPA and other international health agencies. The electric and magnetic fields from the proposed line will not exceed the guidelines published by the ICNIRP and no mitigation is necesssary. SP Manweb will continue to act upon the current advice of the Government and HPA in relation to the possible risks to

[1] Health Protection Agency (HPA) EMF and Cancer FAQs. Last reviewed 8 September 2008. http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1197637107234?p=1158934607761.

human health from power-frequency fields from overhead and underground power lines.

22.17 The distances to nearby dwellings and to other infrastructure, as well as the experience and standard practices of SP Manweb in addressing radio interference and magnetic induction, justify the classification of these effects as of very limited significance.

Noise

Construction noise

22.18 During construction contractors would be required to maintain low noise levels in the vicinity of dwellings or other noise sensitive receptors. This will be acheived by employing sufficiently silenced machinery and by distancing, or where practicable screening, noisy activities or items of plant, as outlined in BS5228: 1984. Noise levels generated during construction of the wood pole line are likely to be low.

Mitigation

22.19 All activities which give rise to appreciable noise will be subject to the requirements of best practice in terms of both Health and Safety Requirements and Environmental Health Requirements. The Environmental Management Plan will detail the approaches the contractor will adopt to ensure that construction noise will remain within acceptable levels.

Operational noise

22.20 Overhead line noise is generated when the conductor surface electric stress exceeds the inception level for corona discharge activity. Transmission and distribution line conductors are designed to operate below this threshold. However, surface contamination on conductors will cause a local enhancement of electric stress and possibly initiate discharge activity. At each discharge site a limited electrical breakdown of the air occurs. A portion of the energy associated with the corona process is released as acoustic energy and radiates into the air as sound pressure waves.

22.21 The highest noise levels generated by a line generally occur during rain. Water droplets collect on the surface of the conductor and may initiate corona discharge. The number of droplets, and hence the noise level will depend primarily on the rate of rainfall.

22.22 There will be no audible noise from the underground cables.

Mitigation

22.23 Since audible-noise levels due to the line will be imperceptible at the nearest property, no mitigation measures are necessary.

23.0 EFFECTS ON PLANNING AND DEVELOPMENT PROPOSALS

Introduction

23.1 The application for consent to install and operate the proposed overhead line under Section 37 of the Electricity Act 1989 includes a request that deemed planning permission is granted for the development. This chapter considers the effects of the proposed overhead line upon development proposals. Committed development is defined as one for which full or outline planning permission has been granted. Planning proposals and designations have been considered where they can be found in an approved development plan or in a published consultative draft.

23.2 Planning context, in particular protective environmental designations and development allocations which are likely to conflict with overhead line routeing, is outlined within Chapter 7: Study Area Inventory and Appendix 7A.

Effects on land allocated for development

23.3 Development allocations are illustrated on Figure 7.3. The proposed route would not pass through any areas allocated for development.

Effects on known development proposals

23.4 During project routeing studies and the environmental assessment process SP Manweb has liaised with local planning authorities to ensure that the proposed overhead line does not compromise known development proposals. Oswestry Borough Council issued an Issues and Options Report in 2006 which included Site Allocations Appendix maps. These have been examined and no sites would be crossed by the proposed overhead line. Additionally, a search of the planning register was undertaken prior to submission of the application to verify that no applications for planning permission which would be affected by the proposed line were under determination at that time (January 2009).

Effects on planning policy

23.5 Consideration of any proposal requiring planning permission (or deemed planning permission) is required to consider whether the proposals accord with 'the development plan'. The area in which the proposed overhead line would be constructed is under the administration of Wrexham County Borough Council, Shropshire County Council and the local councils of the Borough of Oswestry and (to a very minor extent) North Shropshire District. A new unitary authority, Shropshire Council, assumes the development control functions of the local councils of the Borough of Oswestry and North Shropshire District in April 2009 (see Chapter 7: Study Area Inventory). At present, the development plan context for the proposed overhead line at regional and local authority level is found in:

- Oswestry Borough Local Plan 1996-2006 (Adopted July 1999)
- Wrexham Unitary Development Plan 1996-2011 (Adopted February 2005)
- North Shropshire Local Plan 2000 – 2011 (Adopted December 2005).

23.6 The proposed route passes through or crosses areas designated as follows:

- Two internationally protected Special Areas of Conservation (which are also nationally designated SSSIs), Johnstown Newt Sites and River Dee and Lake Bala;

- One locally designated County Wildlife Site: Moor Wood in Wrexham County Borough.
- One nationally protected Scheduled Monument: a section of Wat's Dyke, and a further section of Wat's Dyke which is unscheduled but considered of national importance;
- Areas locally designated as being of special landscape value;
- Areas identified in the local development plan where mineral resources are safeguarded from development which would sterilise the deposits;

23.7 The effects on these designated areas are identified and evaluated in detail within chapters relating to nature conservation, cultural heritage, landscape and mineral resources respectively.

Conclusion

23.8 There is no allocation of land for the proposed overhead line in planning policies. As has been demonstrated, there is very infrequent mention of overhead lines in national, regional or local planning policy. This is consistently the case for infrastructure installations of this type and a proposal could not be consistent with all aspects of planning policy in the development plan. Wrexham's policy EC5 regarding Special Landscape Areas acknowledges that essential operational development by utility services providers will be subject to less strict development control. When considering development proposals, planning authorities are obliged to have regard to the development plan and any other material considerations.

23.9 There would be no effect upon development proposals.

24.0 ENVIRONMENTAL MANAGEMENT PLAN AND RISK ASSESSMENTS

Introduction

24.1 Best practice in EIA suggests that the Environmental Statement should provide details of any management plans that are to be implemented to deliver mitigation measures and to monitor the environmental impact of the project. The Company is committed to the instigation of mitigation measures contained in the Environmental Statement or imposed as consent conditions.

Environmental Management Plan

24.2 SP Manweb, through its agent Energy Networks, will produce a document entitled the 'Environmental Management Plan' (EMP). This will ensure that due cognisance is made of the potential impact of the development on the environment and outlines the means by which the effects of the works will be minimised.

24.3 In detail, this document will help control and guide the working practices of the contractor during the construction of the proposed overhead line. This will be reviewed and updated through the construction process to reflect the contractor's input from method statements and documentation specific to types of working or geographic areas. The document will also incorporate relevant published guidelines by reflecting best practice in protecting the environment during the works. The formal contract documents will bind the contractor to implement these controls and follow best practice in construction methods and environmental management. The EMP will, along with other contract documents, form the basis for environmental audits of the site which will take place periodically during the construction works.

24.4 Amongst other things the EMP will contain:

- The approved planning consent drawings;
- Any licences required under The Conservation (Natural Habitats etc) Regulations 1994 or similar legislation;
- A list of all planning consent conditions placed on the works;
- The Environment Agency's Pollution Prevention Guidelines PPG1 to 6 and PPG8 (including emergency contact numbers);
- Details of available access to the site;
- Method Statements for the different activities on site;
- Construction Programme;
- Contact Addresses and Telephone Numbers; and
- SPPS' Grantor's Charter (which explains how responsibilities to landowners and occupiers are to be addressed).

Risk assessments

24.5 Environmental risk assessments will also be required to be carried out by the Principal Contractor for site specific activities that have been identified with the potential to adversely affect the environment. They will be integrated with the Site Environmental Management, Site Quality Management and Safety Plans. Procedures detailed will include:

- Avoidance and minimising waste and pollution;
- Maximising the recovery of materials;
- Keeping footpaths and roads clear;
- Protecting the occupiers and users of adjacent buildings, agricultural and forest areas and the public;
- Reducing and containing dust, equipment emissions, noise and vibration;

- Ensuring satisfactory removal and disposal of waste;
- Ensuring materials are stored correctly and safely; and
- Incident prevention and response including spill prevention and clean up.

24.6 Best Practical Environmental Option (BPEO) will be used to control all risks to the environment. All staff, subcontractors and visitors to the site will receive induction in environmental and health and safety standards and procedures, and staff will be trained in relevant environmental practices and procedures. In addition, a Scottish Power representative charged with supervising the works (Clerk of works) will be permanently based on site during the construction works and will ensure that the works are carried out to the specification.

24.7 The contractor will be required to operate an environmental management system and for this to be regularly audited and reviewed to check that procedures are being followed and that legislative and other requirements and standards are being met and that the goal of best practice in environmental management is being achieved.

25.0 MITIGATION SCHEDULE

Mitigation through design and route selection

25.1 The process of selection of the proposed route has been the most important and effective source of mitigation for the overhead line. By employing appropriate routeing strategies, it has been possible to avoid a number of potential effects from occurring at the outset. This has been achieved through arriving at a proposed route which responds to the specific landscape and visual characteristics of the site, and which seeks to avoid specific locations that are deemed particularly sensitive to development of this type.

25.2 Another important factor in mitigating the proposed overhead line is the technical design of the line itself. Advances in technology have meant that overhead lines carrying a voltage of 132kV can now be carried on wood pole structures, approximately 16m in height, and with steelwork supporting the insulators and lines. It is anticipated that a reduced visual impact will result compared to the traditionally used steel lattice towers.

Other mitigation measures

25.3 Commitments to work in a certain way, or to confirm the final route with defined distances of working or excavation from features of potential sensitivity, can assist in ensuring potential effects are avoided. Several areas have been identified where the tolerance corridor for siting supports will be reduced to minimise the effects upon environmentally sensitive locations. Prior to construction, careful programming of construction operations will be undertaken to avoid seasonal effects on wildlife where possible. Pre-construction surveys will be undertaken to ensure contemporary information is available during detailed selection of access routes, etc. Method statements will be prepared regarding ways of working in relation to sensitive species, habitats or archaeological sites. All construction workers will be made aware of environmentally sensitive areas and aspects via toolbox talks.

25.4 During construction, appropriate working practices will be adopted, and demarcation of working areas will minimise effects upon environmental features. Liaison will continue with landowners, to minimise disruption to farming activities and agree access routes, etc. SP Manweb employs a project clerk of works to ensure that the requirements of the EMP are followed, together with specialist ecological and archaeological advisors.

25.5 Post-construction, replacement planting will be undertaken on a 2 for 1 basis for all trees lost, at locations to be agreed with landowners. SP Manweb will employ best practice during the operational phase of the overhead line, in both management of vegetation to ensure safety clearances, and to minimise effects on landowners (for example, the line will be inspected on foot).

25.6 The primary method of ensuring that specific mitigation measures are implemented will be through development of the Environmental Management Plan (EMP), as outlined in the previous chapter.

Mitigation schedule

25.7 Project commitments have been outlined in previous chapters, and are summarised in Table 25.1: Mitigation schedule.

Table 25.1: Mitigation schedule

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
1.	P	Prior to construction of the overhead line a precise ground survey will be undertaken.	To determine the ground profile along the centre of the line route and for 10m on either side where the ground profile slopes across the line route	Project Characteristics
2.	C	If temporary access roads need to be installed then either a trackway system or temporary stoned access roads are technically acceptable. Any such temporary access roads will be removed following construction	To minimise damage to farmland and wildlife habitats during and post construction.	Project Characteristics
3.	P	Pre-construction survey will be undertaken by an ecologist prior to works in new access or working areas.	To ensure that new access and working areas are located within areas of least environmental sensitivity.	Project Characteristics
4.	C	During construction contractors 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 activities or items of plant, as outlined in BS5228: 1984.	To minimise the effect of construction noise on dwellings and other noise sensitive receptors.	Project Characteristics
5.	C	Crossing of existing power lines will be programmed at times when existing lines can be temporarily taken out of service.	The crossing of lines may cause temporary interruptions to supply while the works are being carried out.	Project Characteristics
6.	C	Scaffolding and nets will normally be erected over major roads and railways to enable the conductors to be pulled out unhindered. Working practices would be agreed with the relevant highway authorities or Network Rail prior to construction work taking place.	To prevent construction materials causing damage to roads/railways or road/railway traffic below	Project Characteristics
7.	C	Where the proposed distribution line crosses navigable rivers and underground pipelines, all requirements of the appropriate authority will be adhered to, both at the design stage when locating individual poles and ensuring minimum clearances are provided, and at the construction stage by complying with relevant codes of practice, specifications and procedures.	To comply with the safety requirements of the relevant authorities	Project Characteristics
8.	P	Method statements will be prepared where works are in or near sensitive sites. These method statements will address issues of habitat, archaeology, designed landscapes and historic structure and will be rigorously applied.	To minimise the impact of works on sensitive sites.	Project Characteristics

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
9.	P	An Environmental Management Plan (EMP) will be produced. The document will be read in conjunction with SP Manweb's Construction, Health, Safety and Welfare requirements. The EMP will help control and guide the working practices used during the construction of the development, and will be reviewed and amended as necessary throughout construction. The document will also incorporate Natural England, Countryside Commission for Wales, English Heritage, Cadw and Environment Agency guidelines by reflecting current best practice in protecting the environment during the works.	To control of environmental effects during construction	Project Characteristics
10.	C	Topsoil excavated from the cable trench will be stored separately from other material from the trench and will be stored separately, local to the trench. Excavated topsoil will be used to complete the backfilling once the cable has been laid and the initial backfilling has taken place. During the operation to lay the cable suitable crossing points over the cable trench would be provided	To ensure that topsoil is restored to the route of the cable trench following completion of works. To ensure access to properties local to the trench is maintained.	Project Characteristics
11.	C	In private land, underground cable will be protected by concrete tiles laid at such a distance above the cable as to ensure, so far as reasonably practicable, that any person inadvertently excavating the ground above the cable will receive a warning of its presence. The cable route will be indicated by above-ground markers located at the centre of the cable trench and which will be placed at field boundaries to indicate the cable route. Such markers will be located so as not to interfere with normal farming activities.	To comply with safety requirements of the relevant authority.	Project Characteristics
12.	C	Where underground cables are laid in the highway, all works would be agreed in advance with the relevant highway authority. Prior to any works on the public highway, appropriate warning signage and barriers would be erected. All existing services would be located and their positions marked. Procedures for working near to statutory undertakers equipment would be followed.	To comply with safety requirements of the relevant highway authority.	Project Characteristics
13.	C	In reinstatement of the highway, the selection of materials, correct depths of backfill and surface courses and compaction layers will be those specified in HAUC Specification for Reinstatement of Openings in Highways June 2002. All reinstatement works will be completed to the satisfaction of the highway authority. Notices indicating the presence of the underground cables will be prominently displayed local to the cable route, e.g. on road lighting standards.	To comply with safety requirements of the relevant highway authority.	Project Characteristics

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
14.	P	There are a number of situations where a reduced tolerance is sought, primarily to avoid environmentally sensitive locations within the corridor. The general location of these areas is shown on Figure 11.2. .	To ensure that changes do not cause an unacceptable change in the extent or significance of any environmental effects, compared with those identified in the ES.	The Proposed Route
15.	C	Ecological constraints were considered at route selection stage. Specialist ecological advice will continue during detailed siting of pole positions in sensitive habitats and for precise siting of temporary access tracks and other site infrastructure.	In order to avoid damage to habitats.	Ecology
16.	C	Ecological mitigation measures will be designed by a suitably qualified and experienced ecologist in consultation with the relevant statutory conservation organisations. An ecologist will supervise the implementation of all ecological mitigation measures.	To ensure that ecological mitigation measures are effective in design and are implemented as intended.	Ecology
17.	C	Working areas will be maintained to a strict minimum, with demarcation of sensitive habitats.	To ensure construction workers operate within agreed working limits.	Ecology
18.	P	Detailed method statements will be prepared in advance of construction for all activities that have the potential to adversely affect sensitive habitats and species. Where necessary, the method statements will be approved under Natural England/CCW licences. Construction best practice method statements will be incorporated into the construction Environmental Management Plan (EMP) and be prepared in advance of construction works.	The implementation of best practice method statements for construction works will minimise the effects on habitats and species of conservation concern.	Ecology
19.	P	Pre-construction surveys of the following receptors will be undertaken: badger, barn owl, dormouse, farmland birds, great crested newt, otter and water vole.The extent of these surveys is detailed within Chapter 15: Effects on Ecology and Nature Conservation. Of these, Natural England or WAG licences would be required where works could potentially affect badger, barn owl, dormouse, great crested newt or otter.	To minimise the effects of disturbance upon sensitive fauna.	Ecology
20.	C	Avoid the use of artificial lighting, no construction work to begin earlier than 1 hour after sunrise, or finish later than 1 hour before dusk.	General measure to minimise disturbance to fauna.	Ecology
21.	P	All contractors working on the site will be given ecological awareness training prior to the onset of construction and will be made aware of the presence of protected and sensitive species and the importance of implementing the species mitigation measures.	To ensure that species mitigation measures are adhered to.	Ecology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
22.	A	Ongoing management works during the operation of the line will be undertaken in line with best practice guidance.	To ensure that management operations cause minimum disturbance to sensitive habitats and species.	Ecology
23.	P/C	Works within Johnstown Newt Sites SAC: Mitigation in the form of prior strimming and hand searching will be implemented under a Welsh Assembly Government (WAG) great crested newt licence. Great crested newts will be relocated to adjacent habitat unaffected by works. The erection of the pole will be completed within a day, with no excavation holes being left open overnight. Additional aquatic habitat in the form of shallow scrape(s) will be created within the SAC.	These measures will minimise any potential effect on great crested newts, the presence of which is the primary reason for the designation of the site.	Ecology
24.	P	Works in vicinity of River Dee and Bala Lake SAC (also River Dee/Afon Dyfrdwy SSSI): Construction method statements will be produced in advance of construction works, in accordance with best practice guidance, relating to the following activities: • Water quality (sedimentation control) • Track and drainage management • Ditch/watercourse crossings • Management of soil storage areas • Water quality (oil, fuel and chemical contamination) • Japanese knotweed management	To prevent negative effects on River Dee and Bala Lake SAC & River Dee/Afon Dyfrdwy SSSI that could arise from pollution incidents during construction activities.	Ecology
25.	P	Fernhill Pastures SSSI: Any temporary access tracks and working areas that are needed will avoid Fernhill Pastures SSSI. The boundary of the designated site will be demarcated prior to construction works in the vicinity, and no access will be allowed within the SSSI.	To prevent encroachment of development activity into Fernhill Pastures SSSI	Ecology
26.	C	Where lines of trees and tall hedgerows need to be lowered, hedgerows or corridors of scrub of at least 2m in height will be maintained or established.	This will maintain connectivity of habitat that is essential for bat and dormouse populations.	Ecology
27.	P	Suitable method statements will be developed, detailing best practice procedures for all reinstatement works associated with arable field margins, hedgerows and lowland fen.	To ensure that these habitats are restored promptly and effectively following works.	Ecology
28.	C/A	Arable field margins: temporary access tracks will be clearly defined and the ground will be levelled once works are completed.	To ensure this habitat is restored promptly and effectively following works.	Ecology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
29.	P/C	Construction methods and detailed siting of poles will avoid compromising the integrity of field boundaries such as hedgerows or ditches where possible. In the event that a short section of hedgerow is removed for access, this section will either be removed between September and February or will be searched by an ecologist for nesting birds prior to removal. Such sections will normally be replanted with appropriate native, woody hedgerow species. In the event that permanent access is required by the landowner, the gap will be replaced by a gate of no more than 8m wide, with the hedge being replanted from either side.	To minimise the impact of the construction activities on the hedgerows receptor.	Ecology
30.	A	Replacement planting of trees will be undertaken at a ratio of 2:1. The planting will be in locations that are appropriate to replace the losses, subject to landowner agreement. Where landowners would prefer not to accept tree planting, SP Manweb would make a contribution to an appropriate local wildlife trust.	To compensate for the loss of trees resulting from construction works.	Ecology
31.	P	Where either pole position construction areas or access tracks are within 50m of a pond, construction method statements will address the following issues: • Water quality (sedimentation control) • Track and drainage management • Management of soil storage areas • Water quality (oil, fuel and chemical contamination)	To avoid negative effects on ponds	Ecology
32.	P	Construction activities on smaller watercourses such as the River Perry and the numerous streams and ditches will also be undertaken in line with the method statements prepared for avoiding pollution incidents during construction activities (as per works in vicinity of River Dee and Bala Lake SAC)	To avoid negative effects on watercourses	Ecology
33.	A	Post construction monitoring of bird strikes will be undertaken where the overhead line crosses major watercourses. Retro-fitting of bird deflectors will be undertaken in the event that any significant effect is identified.	To assess the potentially significant effect of the overhead line on bird flight routes associated with watercourses.	Ecology
34.	P	Disturbance to a badger sett is only permitted under Natural England or WAG licence and can only be undertaken between July and November inclusive.	To prevent disturbance to badgers during the breeding season.	Ecology
35.	P	Where badgers are likely to be disturbed by machinery (particularly any digging operations), hand digging or tree/scrub clearance within 30m of a sett, a protection zone should be established around the sett, with boundaries demarcated by brightly coloured nylon rope or similar	To prevent disturbance to badgers.	Ecology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
36.	P	Work (and the presence of vehicles) should be avoided within the badger sett protection zone *(see ref. 35)* between December and June when badgers are likely to be breeding and are susceptible to disturbance	To prevent disturbance to badgers during the breeding season.	Ecology
37.	P	Work (and the presence of vehicles) within the badger sett protection zone *(see ref. 35)* should be strictly controlled and supervised by an ecologist between January and November	To prevent disturbance to badgers.	Ecology
38.	P	If works require the partial closure or closure of a sett, the construction of artificial setts should be considered	To compensate for effects upon badgers.	Ecology
39.	P	Barn owl: No work will be programmed between 1st March and 30th September (the nesting season) on trees identified as having potential barn owl roosting or nesting sites.	To prevent disturbance to barn owls during the breeding season.	Ecology
40.	P	Where potential barn owl roosting or nesting sites in trees are to be lost through tree removal or lopping, barn owl nest boxes will be erected, subject to landowner consent.	To ensure that that is no loss of barn owl roost or nest site potential as a result of construction works.	Ecology
41.	P	Where potential bat roost sites are to be lost, bat boxes will be erected subject to landowner consent.	To ensure that that is no loss of bat roost site potential as a result of construction works.	Ecology
42.	P	Where potential dormouse nest sites are to be lost, dormouse boxes will be provided, subject to landowner consent.	To ensure that that is no loss of dormouse nest site potential as a result of construction works.	Ecology
43.	P	Tree removal and the reduction in the height of hedges will either take place outside of the breeding bird season (March to August) or will be preceded by an inspection by an ecologist not more than one day prior to works.	It is an offence to disturb nesting birds.	Ecology
44.	P	Areas of rough grassland, scrub or areas used for cereal crops may be used for nesting by species such as lapwing, skylark and grey partridge. If works are to be undertaken to these areas between March and August, works areas and access tracks will be checked for ground nesting birds by an ecologist not more than one day prior to commencement of works. If nesting birds are identified, an area of 20m diameter will be left undisturbed until adults and young have left the nest.	It is an offence to disturb nesting birds.	Ecology
45.	P/C	Great crested newt: A WAG/Natural England licence will be required will cover construction works in terrestrial amphibian habitat areas associated with identified great crested newt ponds. Mitigation will take the form of vegetation strimming and hand searching prior to works. Any great crested newts found will be moved to suitable adjacent habitat that is not to be affected by the works.	To ensure no great crested newts are injured or killed during construction activities	Ecology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
46.	P	If significant disturbance is likely to occur within 50m of an active otter holt it may be necessary to create a new holt nearby as part of the mitigation works. If otter resting places are discovered within 50m of the construction works, new resting sites will be created in advance of the works.	To compensate for disturbance to an otter breeding site or resting place	Ecology
47.	P/C	Pre-construction water vole surveys will be conducted between March and October on watercourses where a pole position is to be located within 5m of the top of a bank. Where water voles are identified as being present, works will follow a best practice water vole mitigation method statement. This method statement will require the use of passive dispersal methods such as vegetation removal to be employed prior to the commencement of works. Passive dispersal methods are most effective in early April when water voles have come out of hibernation but have yet to establish firm territories or produce young. Attempts to disperse water voles will not be employed between September and March inclusive. Works to areas within 5m of the top of a watercourse bank will not be undertaken between September and March inclusive. Where works affecting areas within 5m of the top of a watercourse bank cannot be completed immediately after passive dispersal measures in early April, the area must be maintained with minimal vegetation from early April until such time as works are completed, which will be no later than August of the same year.	Water voles and their habitat are fully protected.	Ecology
48.	P/C	Underground cable sections: Great crested newts: A WAG/Natural England great crested newt licence will be required so that appropriate mitigation measures can be employed to minimise potential effects on this receptor. Works will ideally be conducted such that no section of trench is left open overnight and no earth is left stockpiled overnight. In the event that it is necessary to leave a section of trench open overnight, an ecologist will inspect the open trench for great crested newt and other amphibians in the morning prior to commencement of works. Any identified great crested newts or other amphibians identified in the trench will be moved to suitable nearby habitat that is unaffected by the works. Where soil is to be stockpiled overnight it will be necessary to surround the stockpile with amphibian fencing suitable for use under a WAG/Natural England great crested newt licence.	To ensure no great crested newts are injured or killed during construction activities	Ecology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
49.	P/C	Underground cable sections: hedge removal: Sections of hedge crossed by the underground cable route will either be removed between September and February or will be searched by an ecologist for nesting birds prior to removal. Such sections will be replanted with appropriate native, woody hedgerow species.	To prevent any effect upon nesting birds.	Ecology
50.	C	Wat's Dyke Scheduled Monument (OA25) a programme of monitoring and survey will be carried out. An archaeological watching brief will be maintained during all excavation associated with the erection of the poles located closest on either side of the Dyke and during the felling of any trees immediately adjacent to the earthwork, including the in-filled ditch	To ensure that there is no accidental damage to the monument during the construction programme	Archaeology
51.	C	Wat's Dyke Scheduled Monument (OA25) No vehicles will cross the earthwork, including the in-filled ditch, and no temporary access roads will be constructed on the earthwork, including the in-filled ditch.	To ensure that there is no accidental damage to the monument during the construction programme	Archaeology
52.	P	Wat's Dyke (unscheduled section)(OA51) If avoidance is not possible, a programme of controlled archaeological excavation of any areas to be affected by intrusive works (pole foundations, access roads etc) will be implemented prior to the commencement of the works.	To partially mitigate the effects upon this unscheduled section of the monument	Archaeology
53.	C	Wat's Dyke (unscheduled section)(OA51) A programme of monitoring and survey will be carried out.	To prevent accidental damage to the monument during construction	Archaeology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
54.	P/C	Archaeological Watching Briefs will be maintained at the following locations: • Offa's Dyke (unscheduled section)(OA14) during any intrusive works in this area; • Cae Gosper field (OA42) during all excavation associated with the erection of poles within the field; • Cropmark complex between Gobowen and Hindford (OA109),for any excavation associated with the erection of poles in the vicinity of the cropmark complex; • Cropmark complex near Fernhill (OA115/116), for any excavation associated with the erection of poles in the vicinity of the cropmark complex; • Unknown archaeological resource, during periods of intrusive activity. Where a watching brief is proposed, the extents will be agreed with the local planning authority/relevant County Archaeologist. If unexpected archaeological remains are identified during the construction works, the requirement for mitigation would be assessed in consultation with the monitoring authorities. Appropriate measures for the treatment of the resource would be agreed between SP Manweb and the monitoring authorities.	To allow for the identification and appropriate recording of any currently unidentified and buried features exposed by topsoil removal.	Archaeology
55.	C	Specialist archaeological advice will continue during detailed siting of pole positions in sensitive locations and for precise siting of temporary access tracks and other site infrastructure.	To avoid effects upon cultural heritage features where possible	Archaeology
56.	P	Cae Gosper field (OA42) Should it be necessary to place poles within the field, a geophysical survey will be undertaken in order to determine the presence/absence and location of buried remains associated with the possible cross/chapel. Pole locations and access tracks will avoid any remains thus identified.	To prevent accidental damage to the feature during construction	Archaeology
57.	P/C	Historically 'important' hedgerows: Pole locations will be adjusted locally where possible to minimise the direct impact upon 'important' hedgerows. Should hedgerows be unavoidably affected, any such impact will be minimised and a process of photographic survey of hedgerow will be undertaken prior to loss, followed by an archaeological watching brief during construction	To partially mitigate the effect upon historically important hedgerows unavoidably affected	Archaeology
58.	C	The positions of cultural heritage features will be taken into account when defining access routes, working areas, temporary storage areas and as necessary when further refining the positions of supports and the cable route post-consent, in compliance with the EMP.	To avoid effects upon cultural heritage features where possible	Archaeology

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
59.	P	A strategy will be formalised for reporting any unforeseen archaeological discoveries made during construction to a retained professional archaeological organisation. This would require any unexpected discoveries in areas not subject to archaeological monitoring to be assessed and dealt with appropriately, and would make clear the legal responsibilities placed upon those who make such finds. These arrangements would be included in the EMP, and would be explained in toolbox talks to the workforce.	To avoid effects upon undiscovered cultural heritage features where possible	Archaeology
60.	P	SP Manweb will liaise with Cadw, English Heritage, Wrexham's Archaeological officer and Shropshire County Archaeologist to agree the process of monitoring implementation of mitigation strategies.	To ensure appropriate mitigation strategies are employed	Archaeology
61.	P	Access to pole positions, and the locations of working areas around each pole site, will wherever possible be agreed in advance with the landowners/occupiers.	To ensure that landowner/occupier consent is given for the works.	Land Management
62.	C	Disturbance of livestock can be a crucial factor, particularly during lambing and calving and SP Manweb will endeavour to avoid any unnecessary access during these activities whenever possible. SP Manweb will arrange pre-entry meetings to ensure that disruption to farming activities is kept to a minimum and there will be liaison with farmers throughout.	To minimise the effects of works on livestock.	Land Management
63.	C	SP Manweb will ensure its contractors carry out the construction work using the optimum balance between 4-wheel drive vehicles and specialist measures such as use of track way or tracked vehicles.	To minimise effects of works on soil structure and land drainage.	Land Management
64.	C	SP Manweb will attempt to ascertain, with the assistance of the landowner/occupier, the location of any field drains which could be damaged by the construction works. Field drains may be diverted at pole sites and protected elsewhere. Any damage to land drainage caused by the construction works will be reinstated and/or compensation paid as appropriate.	To maintain the integrity of field drains.	Land Management
65.	C/A	Where soil has been compacted, deep ploughing or sub-soiling could be necessary unless compaction is limited to the surface layer. Restoration of compacted areas may subsequently be carried out by the contractor, a specialist agricultural contractor or by the landowner/occupier.	To maintain the soil structure in a condition conducive to farming use.	Land Management
66.	P/C/A	SP Manweb Wayleave Officers will ensure that there is communication and cooperation with landowners and occupiers	To reduce disruption of normal day-to-day farming activities.	Land Management
67.	P	On arable land, markers may be erected to delineate the agreed access routes, where required.	To allow normal agricultural operations to be carried on outside the construction routes	Land Management

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
68.	A	SP Manweb will reimburse the reasonable cost of any additional work made necessary by the construction work, such as sub-soiling, liming and harrowing.	To ensure that the land is brought back to its former condition following works	Land Management
69.	C	On grassland, where required, the agreed access routes will be clearly delineated. Any area damaged by the works and agreed to be not in the permanent use of SP Manweb will be reinstated and/or reseeded.	To ensure that land is brought back into agricultural use.	Land Management
70.	C	All field gates will be kept shut unless otherwise requested by the landowner/occupier.	To prevent the disturbance to and straying of livestock.	Land Management
71.	C	Site operatives will at all times follow the rigorous codes of good practice set out by the Department for Environment, Food and Rural Affairs (DEFRA). Access to work sites will, as far as possible, be by way of existing farm roads and field tracks.	To ensure that the effects of works on farmland/wildlife habitats are minimised.	Land Management
72.	C	Normally, access routes will be developed by the passage of contractors transport and plant only. Grading or surfacing will only be undertaken to make good damage. Special plant could be considered to overcome poor access conditions, reduce ground pressure and minimise subsequent soil damage.	To minimise the effects of access route construction/use on farmland/wildlife habitats.	Land Management
73.	C	Any hedgerows or fences will be replaced where breached for access and construction purposes, except where permanent access is required by the landowner/occupier.	To maintain the integrity of hedgerows.	Land Management
74.	C	Care will be taken in locating storage sites, and in storing soil away from watercourses and standing water	To minimise pollution risks to watercourses and standing water.	Land Management
75.	C	Wood pole erection sites and other work areas will be demarcated where necessary.	To ensure that works activities are limited to prescribed areas.	Land Management
76.	C	Topsoil and subsoil from the pole foundations will be stored separately. Any surplus subsoil or rock following backfilling will be removed to a licensed tip or otherwise disposed of as agreed in consultation with the landowner/occupier.	To ensure that works areas are left in a satisfactory condition for the landowner/occupier.	Land Management
77.	C	Contractors and their employees will be instructed to follow good construction practice when working in the countryside.	To ensure that domestic or construction refuse, waste material and other material is not left on site once activity at that location has ceased.	Land Management
78.	C	Significant incidents which may give rise to later damage claims will be notified to Wayleave Officers as they occur.	To ensure that any investigation can be speedily carried out and remedial work put in hand.	Land Management

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
79.	P	A capital payment will be made to the landowner in return for the granting of permanent easement, or alternatively annual payments in the case of a wayleave.	To compensate the landowner for any effects upon the agricultural land during operation of the overhead line.	Land Management
80.	A	Activities by SP Manweb during the operation of the line will be restricted to on-foot line inspections, occasional repairs and maintenance works. All such work will be undertaken after consultation with the landowner, except in the case of an emergency.	To minimise effects upon landowners.	Land Management
81.	A	SP Manweb will make available guidance to farmers and agricultural workers on dangers and precautions appropriate to work near overhead lines.	To ensure the safety of farm workers working in proximity to overhead lines.	Land Management
82.	C	The contractor will be required to ensure safe ongoing access to all key walking/cycling routes and provide an alternative if any route is closed temporarily due to construction activities.	To reduce the effects on recreational activities	Recreation
83.	A	SP Manweb will provide warning signs of the hazard of fishing close to the electrical overhead line points where the proposed line crosses known angling sites. Local angling clubs with responsibility for these stretches/waters will be informed when the power line is erected	To ensure public safety	Recreation
84.	A	Should the proposed overhead line represent a constraint to minerals extraction, SP Manweb would enter into discussions to divert the affected length of the line, either temporarily or permanently.	To prevent constraint to minerals extraction	Mineral Resources
85.	P	The relevant highway authority will be notified of all construction and dismantling work which could cause disruption to traffic. Any special measures that may be required will be agreed in advance.	To minimise interference with traffic flows.	Infrastructure
86.	C	Increased vehicle movements along minor roads in the vicinity of the pole sites are anticipated for brief periods during construction. These will be regulated to meet local conditions.	To minimise interference with traffic flows.	Infrastructure
87.	C	Any construction or dismantling works will be timed to avoid periods of high traffic flows and work will be undertaken in the shortest possible timescale	To minimise interference with traffic flows.	Infrastructure
88.	P	Scaffolding and nets will be erected over major roads. Where necessary, approval for these crossings would be obtained from the relevant highway authority	To prevent construction materials causing damage to vehicles or surfaces below	Infrastructure
89.	P	SP Manweb will ensure the overhead line is built to comply with safety guidance on construction close to railways.	To comply with Network Rail safety requirements.	Infrastructure

Ref.	Pre (P) During (C) After (A) Construction	Mitigation	Reason	ES Chapter
90.	P	Crossing the Shropshire Union Canal, working and construction practices will be agreed with British Waterways prior to construction work taking place. Scaffolding and nets will be erected over the canal prior to conductor stringing, if required.	To prevent construction materials causing damage to waterway or waterway traffic below	Infrastructure
91.	P	Sections of the low voltage line will be deviated locally or placed underground where it is not possible to achieve minimum clearances to low voltage lines without having to increase pole heights. All telecommunication lines crossed by the proposed route would also be deviated or placed underground.	To ensure safety clearances whilst minimising visual effects.	Infrastructure
92.	P	Where the proposed overhead line crosses other existing lines, SP Manweb would liaise with operators prior to construction.	To minimise disruption to supply during the construction period	Infrastructure
93.	P	The exact position of all underground pipelines and details of all working practices would be agreed with relevant operators/statutory undertakers prior to construction work taking place. Construction of the line will comply with relevant Codes of Practice, Specifications and Procedures	To prevent damage to other utilities	Infrastructure
94.	P/C/A	SP Manweb considers that even a remote possibility of a health risk must be taken seriously, because very large numbers of people are exposed to power-frequency fields from both overhead and underground power lines and from many other sources, including domestic appliances. Further studies are in progress in this country and elsewhere to establish whether or not there is any genuine health risk. SP Manweb will continue to act upon the current advice of the Government and HPA in this matter.	To ensure public safety	Physical Effects
95.	C	All activities which give rise to appreciable noise will be subject to the requirements of best practice in terms of both Health and Safety Requirements and Environmental Health Requirements. The EMP will detail the approaches the contractor will adopt.	To ensure that construction noise will remain within acceptable levels	Physical Effects

26.0 SUMMARY OF EFFECTS AND CONCLUSIONS

Introduction

26.1 This concluding chapter is intended to present a brief summary of the project and of the route evaluation/selection process. It provides a summary of the main conclusions arising from the environmental assessment of the proposed overhead line.

The proposal

26.2 SP Manweb is proposing to reinforce its electricity distribution network by constructing a new 132kV wood pole power line. The reinforcement will consist of an overhead line, approximately 21 kilometres in length, with a cable section connecting each end to the substations at Legacy and Oswestry respectively.

26.3 The reinforcement of the distribution network is needed to ensure SP Manweb complies with its statutory duties to develop and maintain an efficient, co-ordinated and economical system of electricity supply, and to secure supplies to 80,000 customers.

The route selection process

26.4 The routeing process undertaken to identify the Proposed Route is described in Chapter 5. This process allowed SP Manweb to identify a technically feasible and economically viable overhead line route between two specific locations which causes the least disturbance to people and the environment.

26.5 The identification and subsequent iterative improvement of the route is undertaken through three distinct but related processes:

- The collection of environmental information across a broad range of potential issues;
- Extensive consultation with a broad range of consultees; and
- Technical studies into appropriate and feasible ways to provide the reinforcement.

26.6 The combination of these studies has resulted in the overhead line route as proposed in Chapter 11 and assessed within the following chapters of this ES.

26.7 A number of route alternatives for the proposed 132kV distribution line were examined before confirming a preferred route option, which was published in a Consultation Document (2007). Following consultation, subsequent detailed review of the preferred route resulted in adoption of an alternative route for the southern section of the preferred route for environmental and technical reasons. This amendment concluded the evaluation of route alternatives and allowed a final proposed route to be refined and submitted for environmental assessment.

The proposed overhead line route

26.8 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.

26.9 The route originates from Legacy substation utilising underground cable. East of Wrexham Road, it transfers to wood pole overhead line and continues in a south-easterly direction across open farmland, to skirt the northern boundary of Johnstown Newt Sites SAC.

26.10 The route continues in a generally south easterly direction through agricultural land, crossing Wat's Dyke (Scheduled Monument) near Gyfelia.

26.11 The route follows an alignment east of Wynnstay Park (Grade I Registered Parkland), and then takes a southerly direction through agricultural land following a clough woodland into the Dee valley. The overhead line crosses the River Dee using an existing break in the valley woodland on the north bank.

26.12 South of the River Dee, the route follows the natural contours of the valley of the River Ceiriog to Tenement, where it spans the river, and crosses an unscheduled section of Wat's Dyke at the top of the eastern valley side.

26.13 East of the valley, the route continues in a south-easterly direction around the eastern edge of St Martin's village, then follows a south-westerly alignment through the Upper Wigginton area. It crosses low-lying land around the Shropshire Union Canal to the north of New Marton Locks.

26.14 From here, the route runs in a generally south-westerly direction, to the west of the small settlements of Henlle and Hindford. The route is adjacent to Fernhill Pastures SSSI. It passes to the west of the listed building of Great Fernhill, then follows a westerly alignment towards the A5 between Oswestry Orthopaedic Hospital and Park Hall Farm Countryside Experience.

26.15 The overhead line terminates adjacent the A5, and the final connection to Oswestry substation would be made by underground cable alongside the A5 (approximately 1.4km).

Summary of the environmental impact assessment process

26.16 A reasonable 'worst case' scenario approach has been taken for the EIA. An assessment of the potential maximum effect is presented which allows the required flexibility for SP Manweb in the finalisation of details of the project design and provides security to the planning authorities that the environmental effects of the development will be no greater than that set out in this ES and may be notably less.

26.17 The baseline conditions and the assessment of the likely effects on the physical, biological and human environment in and around the proposed route corridor have been described in Chapters 13 to 23. Any effect of the proposal judged to be either major or moderate will be considered to be 'significant' within the terms of the Electricity Works (EIA) Regulations. Where an effect on the environment has been deemed to be adverse and significant, mitigation measures have been proposed, as far as practical, in order to reduce or remedy the adverse effects.

Summary of effects

26.18 The routeing and technical solutions adopted have resulted in a proposal in which the effects of the proposed overhead line have been reduced or eliminated most disciplines to such an extent that there are few residual significant effects. These are described below. However there are a number of effects on aspects of the

environment which are **not significant** and these are described in detail in each chapter.

Visual effects

26.19 The proposed route has been identified to minimise effects on the landscape character and in views. An overhead line inevitably will be visible in the landscape. However the nature of the wood pole support chosen as opposed to a steel tower (pylon) line will significantly limit the scale of effects.

26.20 From the viewpoints assessed, **which represent a selection of the most sensitive visual receptors along the proposed route**, the visual effects of the proposal would be moderate in a third of the viewpoints assessed, and less in the remainder. There would be no major adverse visual effects.

26.21 Of the 13 viewpoints where the visual effects are considered to be moderate, and therefore **significant**, only four are located at distance greater than 250m from proposed route (centre of tolerance corridor). The assessment indicates, as would be expected, that greater effects are likely in the immediate vicinity of the proposed overhead line, rather than from more distant viewpoints.

26.22 Moderate visual effects have been predicted in the following locations:

- From the eastern edge of settlement at Pentre Bychan (Viewpoint 1);
- From the public footpath along Wat's Dyke, near Gyfelia, where the route crosses the scheduled monument (Viewpoints 35 and 36);
- From the edge of Wynnstay Park registered historic parkland (Viewpoint 7);
- From within the valley of the River Ceiriog, a locally designated Special Landscape Area, in the vicinity of Tenement (Viewpoints 11, 12 and 13);
- From public footpaths with panoramic views over relatively open landscapes, north of St Martin's village (Viewpoint 18), west of Wigginton (Viewpoint 21) and south of Rhosygadfa (Viewpoint 24)
- From within the relatively open, shallow valley of the Shropshire Union Canal (Viewpoints 22 and 23)
- From the B5009, Gobowen to Whittington road, near Great Fernhill listed building (Viewpoint 29).

26.23 As the selected viewpoints constitute a selection of the most sensitive viewpoints in the vicinity of the proposed overhead line, visual effects experienced by other receptors are likely to be of equal or lesser significance. In addition, the majority of the proposed overhead line would be likely to be visible over a relatively short distance (two to three fields), with visibility curtailed by vegetation.

26.24 Overall, significant visual effects are limited in number and geographical spread.

Effects on the landscape

26.25 The proposed overhead line would have effects of **minor** or **moderate** significance upon the locally designated areas of landscape within its immediate vicinity. The local designations primarily relate to the Dee and Ceiriog River valleys. The alignment has been selected to avoid effects upon the highly sensitive steeply wooded banks of the River Dee – and would have an effect of **minor** significance upon the character of this area.

26.26 The route does not directly affect any registered historic parks or gardens, or their essential settings, and would have **no effect** on the landscape character of these areas.

26.27 The proposed overhead line is likely to have an effect upon the landscape character within its immediate vicinity of **minor** significance for the most part.

26.28 In some places, generally where the landscape is judged to have a moderate or higher sensitivity to the type of development proposed, there may be effects of **moderate** significance, at a local scale, upon landscape character. These sections have been identified as:

- around Park Eyton, in the Welsh Maelor character type
- the upper slope on the eastern side of the Ceiriog valley, in the Principal Timbered Farmlands (St Martin's) character type
- between St Martin's and Pentre Morgan,around the Ellesmere Road area, in the Principal Timbered Farmlands (St Martin's) character type
- around the Shropshire Union Canal, in the Lowland Moors (New Marton) character type
- within the River Perry valley, in the Lowland Moors (Halston Hall) character type; and
- the relatively open landscape between the River Perry and the A5, in the Principal Settled Farmlands (Gobowen and Oswestry) character type.

26.29 Together, these sections comprise approximately 30% of the overhead line (and consequently a smaller percentage of the total route between Legacy and Oswestry.)

26.30 The effects upon landscape character are anticipated to be highly localised, and for the majority of the route will be minor, with no effects of greater than moderate significance.

Effects on ecology and nature conservation

26.31 A large number of ecological receptors have been assessed, with nature conservation values ranging from international to within the immediate vicinity. Of these, the overhead line will have only one **significant negative effect**, in the short to medium term, upon Lowland Mixed Deciduous Woodland (and individual mature trees). This effect is significant at only a **Local** level, and will reduce to **no significant residual effect** in the medium to long term, as replacement trees mature. If it does not prove possible to undertake replacement planting, the long term effect would remain significant, but at a local scale. SP Manweb would make a contribution to an appropriate local wildlife trust to compensate for this loss.

26.32 The overhead line will have **no effect** or **no significant residual effect** on all other ecological receptors.

Effects on archaeology and cultural heritage

26.33 A total of 79 archaeological and cultural heritage features have been identified within a 1km corridor centred on the proposed route. In the 100m corridor within which direct effects could potentially occur, there are two Scheduled Ancient Monuments, one listed building, and four undesignated sites. In addition, the 100m corridor contains 126 historically important hedgerows. The proposed route crosses Wat's Dyke twice (one section scheduled and one unscheduled).

26.34 Direct effects on the scheduled section of Wat's Dyke have been avoided through siting of supports as far as possible from the monument, resulting in a residual direct effect that is of minor significance. The position of the unscheduled section of the dyke at the top of the slope means that siting a support pole in close proximity to the monument is likely to prove unavoidable in order to achieve sufficient ground clearance for the conductors. Mitigation measures will be put in place, including a programme of controlled archaeological excavation of any areas to be affected by support foundations. However this is likely to remain a major adverse and **significant effect** upon this section of Wat's Dyke.

26.35 The assessment identified five cultural heritage sites that would experience a **significant effect** upon the quality of their settings as a result of the proposed overhead line. These are two scheduled monuments (Wat's Dyke south of Black Brook Bridge and Hafod-y-Bwch tumulus), a Grade II listed building (Bryn House), and two undesignated sites (the Shropshire Union Canal (Llangollen branch) and the unscheduled section of Wat's Dyke described previously). It will not be possible to mitigate these effects.

26.36 A comprehensive programme of mitigation is proposed to reduce the effects on the archaeological resource, known and unknown. Implementation of such a programme will generally reduce any other potential residual effects of the scheme to **minor adverse**.

Effects on land management

26.37 There will be some interference with farming activities along the proposed overhead line during the construction period. The presence of pole supports in fields is likely to cause some inconvenience, but maintenance of the overhead line would cause minimal disruption to farming activities. The overall effect of the overhead line on agricultural interests along the route corridor is considered to be of **minor significance.**

Effects on recreation and tourism

26.38 Careful routeing to avoid specific recreation and tourist facilities has prevented direct effects upon the majority of identified resources. The main effect of the proposed overhead line on recreation and tourism occurs where the line crosses recreational routes including the Shropshire Union Canal, the Maelor Way and Wat's Dyke Way. In general, these effects are considered minor and therefore **not significant.**

Effects on mineral resources and landfill sites

26.39 The proposed overhead line would cross areas where mineral resources are protected, and where consultation is required for development. Direct effects on resources are very small and of **minor significance**.

26.40 The proposed overhead line would have **no effects** upon landfill sites.

Effects on infrastructure

26.41 The proposed overhead line would have **no significant effect** on road, rail or canal communications or general infrastructure along the route corridor.

Effects of electro-magnetic fields on human health

26.42 It has been suggested that exposure to power-frequency magnetic fields could be linked with various health problems. SP Manweb considers that even a remote possibility of a health risk must be taken seriously and will continue to act upon the current advice of the Government and HPA in this matter.

Noise effects

26.43 Noise levels generated during construction of the wood pole line are likely to be low, and all activities which give rise to appreciable noise will be subject to the requirements of best practice in terms of both Health and Safety Requirements and Environmental Health Requirements.

26.44 During operation of the overhead line audible-noise levels due to the line will be imperceptible at the nearest property, and **not significant**.

Effect on planning and development proposals

26.45 The proposed route would not pass through any areas allocated for development, and no applications for planning permission which would be affected by the proposed line were under determination prior to submission of the application (search undertaken January 2009). There will be **no effect** upon development proposals.

Mitigation

26.46 The proposed overhead line has been developed through the iterative process of environmental assessment to minimise environmental effects as far as is possible within the technical constraints of a project of this nature. Mitigation has been undertaken at three levels:

- avoidance of potential effects;
- reduction of potential effects; and
- offset.

26.47 Full details of the mitigation for each discipline are set out within the individual assessments and the overall package of mitigation measures are set out in Chapter 25.

Conclusions

26.48 The addition of an electrical circuit between Legacy and Oswestry will provide essential reinforcement to the high voltage distribution system in the Cheshire, Merseyside, North and Mid-Wales area. SP Manweb proposes to construct a new 132kV overhead line which would be supported on wood poles.

26.49 A route for this new overhead line has been identified following detailed examination of a number of route alternatives and extensive consultation with both the public and statutory authorities.

26.50 The routeing and technical solutions adopted for this reinforcement of the 132kV network have resulted in a proposal that is only subject to limited significant effects within localised areas. The limited number of significant effects (which cannot be avoided in a development of this nature), indicates that SP Manweb have complied with their dual obligations, as a licensed Distribution Network Operator, to provide a

technically feasible and economically viable reinforcement which causes the minimum disturbance to people and the environment.

GLOSSARY

Glossary

Angle/Tension Support: A support erected at an angle to allow for a change in direction or to divide the overhead transmission line into different sections.

Circuit: Consists of metal conductors, single or grouped in bundles of two (twin) or four (quad), one bundle for each of the three phases in which electricity is transmitted. Two circuits are usually strung on each tower line, one circuit on each side of the tower, giving the greatest economic benefits and minimising the number of towers required. Where a wood pole is to be used only one circuit is strung between supports.

Conductor: The name given to the metallic wires strung from support to support to carry electric current.

Double Circuit Line: Transmission towers carrying two circuits, one either side. See Circuit.

Earth Wire: In the event of a short to earth on any part of the system, the earth wire will make the system safe by acting as a path for the fault current.

Electric Field: A measure of the force experienced by an electric charge in the presence of other charges.

Electrical Clearances: Specified minimum clearances that must be maintained between overhead transmission lines and the ground, obstacles, roads, railways, property and other power lines.

Electromagnetic Radiation: Includes the high frequency visible light or radio waves emitted by spark or corona discharges from high voltage conductors – not to be confused with power frequency electric and magnetic fields.

Insulators: Materials that are very poor conductors of electricity. Air exists as natural insulation around conductors, but at supports, an insulator string (or strings) is required to prevent live contact. Glass, porcelain or composite material insulators are used.

Insulator Strings: Insulator units assembled in articulated strings. Single strings are provided for each phase of conductors.

Kilovolt (kV): 1,000 volts.

Kilowatt (kw): 1,000 watts.

Lattice Steel Tower: The standard form of support structure (pylon) for high voltage transmission lines in the UK. They are constructed as an open framework of steel angle sections.

Magnetic Field: Whereas electrical field depends on voltage, the magnetic field depends on current. The current carried by a power line varies according to the demand for power at any given time. Both electric and magnetic fields induce small currents in nearby objects, but magnetic fields have no direct perceptible effects.

Refurbishment: The replacement of old conductors, insulators, earth wires, etc, as used in overhead line construction.

Substation: Controls the flow of power by means of transformers and switchgear, with facilities for control, fault protection and communications.

Transformer: An apparatus which transforms currents from one voltage to another.

Watt: The unit of electric power.

Wood Pole: An alternative to the steel lattice tower support where only a single circuit is required.

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Clwyd & Powys Archaeological Trust (CPAT) (Sites of archaeological interest)

Countryside Council for Wales, (Clwyd Inventory of Ancient Woodlands, SACs and SSSIs)

DEFRA (Agricultural Land Classification for English part of study area)

English Heritage (Register of Historic Parks and Gardens, Scheduled Monuments)

Forestry Commission, Wales (Ancient Woodlands information)

Joint Nature Conservation Committee, www.jncc.gov.uk (SACs and SSSIs)

LANDMAP website (landmap.ccw.gov.uk)

National Grid (existing 400kV overhead line information)

National Grid Gas (formerly Transco) (gas pipeline information)

National Trust Wales (National Trust Land)

Natural England (formerly English Nature), (Ancient Woodlands Inventory, SACs and SSSIs)

North Wales Borderlands website (tourist information)

North Wales Wildlife Trust (local wildlife sites)

Scottish Power (existing overhead line information and digital terrain model data)

Shropshire Wildlife Trust (local wildlife sites)

Sustrans website (cycle routes)

Wales & West Utilities Limited (gas pipelines)

Welsh Assembly Government (ALC for Welsh part of study area)



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