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12.1 ECOLOGY

12.1.1 *Potential Impacts*

Nature conservation impacts that may result from the project include:

- permanent loss of habitat or species due to permanent or temporary landtake for the proposals;
- creation of barriers to the movements of animals, especially mammals, amphibians and invertebrates and plants with limited powers of dispersal;
- fragmentation of habitat or severance of wildlife corridors between isolated habitats of ecological importance;
- disturbance or damage to adjacent habitat caused by long term operational activities or by construction activities which have a long term effect, (movement of vehicles and personnel, artificial lighting, dust, spillage of fuels and chemicals, emissions and noise);
- impacts on habitats caused by alterations to drainage regimes;
- impacts on species caused by permanent alterations in night time light conditions; and
- creation of new habitats and introduction of species as a result of reinstatement works, habitat enhancement proposals and landscaping.

12.1.2 *Construction Impacts*

This assessment of construction and operation impacts takes into account agreed mitigation that is listed in *Section 12.1.6*.

Designated Sites

No proposed or designated statutory or non-statutory sites of nature conservation value will be directly, or indirectly affected by the proposals.

Habitats and Species

The surveys identified one ditch of potential nature conservation value to the north of the proposed sub-station and some badger interest along the route. With these exceptions, no habitats or species of particular nature conservation value will be affected by the works. The proposals will result in the loss of approximately 1200 m² of habitat of low nature conservation value

(predominantly improved grassland and some arable) and there will be some additional disturbance to a small area of sparse dune grassland that has formed on shingle and pebble. It is likely that some disturbance to a range of common bird and mammals species will result, although the works are expected to be completed within a month. The proposals will largely avoid tree loss, although an over mature oak tree close to the route will require felling for safety reasons. This tree will be surveyed before it is felled to check for its use as a roost by bats.

Implementation of best site management practice during construction will ensure that habitat loss is restricted to the minimum necessary for the works. Prior to construction commencing the route will be checked for protected species interests. If any works are likely to cause significant impacts to such species (if identified), appropriate mitigation measures will be agreed with CCW and implemented prior to construction. No works will take place within 30 metres of the entrance to a known badger sett. Significant impacts to the ditch will be avoided by careful alignment to avoid burrows and important water vole habitat.

No known breeding sites of great crested newts will be directly affected by the proposals. Where the route passes within 500 metres of a pond amphibian fencing will be installed to prevent animals straying onto the working area if work is to take place at a time when amphibians could be moving to or from their breeding ponds. The exact positions and extent will be informed by surveys at an appropriate time of the year.

12.1.3 *Operational Impacts*

Designated Sites

No proposed or designated statutory or non-statutory sites of nature conservation value will be directly or indirectly affected during operation of the proposals.

Habitats and Species

There will be few or no effects to habitats and most species during operation. Occasional maintenance visits will be required, however, these will be short and access will be along existing routes and affect only habitats of low nature conservation value. Due consideration will be given to the possible presence of protected species during these visits and any necessary measures taken (see *Section 12.1.2*).

The greatest risk from the operating lines is of birds colliding with the wires. The is greatest for birds:

- with a high wing loading and low aspect ratio (*ie* those with rapid flight, heavy body and small wings (Bevanger, 1998));

- with a high frequency of flight through power lines (*ie* more abundant species); and
- with relatively low mortality rate and particularly those not able to compensate for additional mortality.

The overhead lines do not cross, or pass close to, any major known bird populations considered to be at a particularly high risk of collisions. Occasional larger species such as mute swans are known to be present on ponds close to the route (*eg* on the pond in the public park (SH 979 798)) and it is possible that these species may collide with the overhead electric lines. However, mute swan is a common species in the area but is not recorded in large numbers (Hallas, 2000) and no significant effects on populations of this species are predicted. Bird deflectors will be used to reduce the risk of collision along stretches of the overhead lines adjacent to ponds and other wetland areas where these and other more vulnerable species may occur (see *Section 12.1.6*).

The species most likely to be at risk of electrocution are those that roost or perch on the overhead poles. Electrocution risk has been found to be greater for larger birds, particularly species larger than a jackdaw (Bevanger 1998). Two bird species of note (peregrine and barn owl) are likely to be present in the area. Both are considered to be of medium sensitivity (see *Annex G*), but are particularly vulnerable to electrocution. Given that the spacing of the overhead electric lines will be approximately 2 metres, the likelihood of an impact is considered to be low and no significant impacts are predicted.

12.1.4 *Cumulative Impacts*

The scale of the ecological impacts from the on shore developments of the Rhyl Flats project are low and no habitats or species of particular nature conservation value will be affected assuming appropriate mitigation is successfully implemented. Therefore these proposals are unlikely to contribute to significant cumulative impacts when combined with those of the proposals at North Hoyle, a scheme that is reported to have little effect on terrestrial habitat.

12.1.5 *Mitigation*

The following mitigation measures have been agreed with COWL and will be implemented to reduce the risk of significant impacts to habitats and species of nature conservation value.

- Habitat loss will be limited to the minimum needed for safe implementation of the works.
- The route line has been chosen to avoid habitats and species of greatest nature conservation value.

- Where tree loss is unavoidable, the tree to be felled will be subject to prior survey to establish if nesting birds, bats or other protected species are present. If identified, appropriate mitigation measures will be implemented in consultation with CCW.
- Prior to construction the route will be walked to check for the presence of protected species and any necessary measures taken in consultation with CCW.
- Where the working corridor passes within 500 m of ponds or drains COWL will, if necessary, install amphibian fencing to avoid impacts on great crested newt, which may be migrating to and from breeding ponds. The exact locations and requirements will be informed by further surveys at a suitable time of year, prior to construction.
- Should any protected species be identified once construction works commence, CCW will be contacted and any appropriate mitigation measures will be agreed with CCW and implemented.
- Electrocutation risk will be minimised by having a distance of approximately 2 m between overhead electric lines to reduce the likelihood that birds can bridge them (Janss 2000).
- Collision risk to coastal birds will be avoided by tunnelling the cable beneath the shoreline habitats.
- Bird deflectors will be fitted to the overhead line where it passes close to (within 300m) water bodies and other wetland habitats. Exact locations will be determined by field survey of the final overhead line route prior to construction.
- Topsoil and subsoil will be stripped and stored separately within the working width and reinstated appropriately. The duration of storage will be as short as possible to reduce the risk of long term damage to the soil structure and biota.

12.1.6

Summary

No designated or proposed statutory or non-statutory sites of nature conservation value will be directly, or indirectly affected by the proposals.

The surveys identified one ditch of potential nature conservation value to the north of the proposed sub-station and some badger interest along the route. An over mature oak tree close to the route will require felling for safety reasons. This tree will be surveyed before it is felled to check for its use as a roost by bats.

With these exceptions, no habitats or species of particular nature conservation value will be affected by the works. The proposals will result in the loss of

approximately 1200 m² of habitat of low nature conservation value (predominantly improved grassland and some arable).

Implementation of best site management practice during construction will ensure that habitat loss is restricted to the minimum necessary for the works and appropriate mitigation measures will be implemented to avoid significant impacts to protected species.

12.2 *TERRESTRIAL ARCHAEOLOGY*

12.2.1 *Construction Impacts*

The following aspects of terrestrial construction have the potential to cause impacts to terrestrial archaeology.

- landfall junction chamber and underground cabling to onshore substation;
- onshore substation;
- overhead lines; and
- construction compounds and access.

The landfall for the cable route to shore is described in *Section 3*.

A landfall junction chamber will be installed immediately landward of the sea defences. If the onshore substation option is adopted, then cables will run underground in a trench up to 1.9m wide to the substation. Excavations for the landfall junction chamber and for the underground cabling may impact upon buried features and deposits, notably horizons relating to evolution of the coast, marsh and reclamation.

If selected, the onshore substation will be relatively small and of conventional construction set within a compound. Construction is likely to involve some excavation, including topsoil stripping of the compound footprint, which may impact upon buried features and deposits, possibly dating back to the medieval reclamation of the marsh.

The overhead lines between the substation and the main grid connection will be mounted on single or twin poles c. 0.3m in diameter. As the proposed overhead lines run approximately 7km inland from the coast towards Moelfre, it is inevitable that they will pass close to locations of known sites.

The landfall is in the immediate vicinity of Towyn (WA 465). The settlement itself dates only to the nineteenth century, though there were some earlier farmsteads and houses in the vicinity. Towyn school (WA 469, Listed Building) and Church (WA466-8, Listed Building) lie close to the connection point. To the east is Kinmel Rectory (WA 137, Listed Building) and the reported location of a Medieval boundary stone (WA 129).

The grid connection route passes c. 900m to the west of the Cae Coch battlefield site, and c. 400m east of the seventeenth century farmhouse of Hendre fawr (WA 126), which is a Listed Building (Grade II*). Site WA 460 (an SMR reference to a tower within a garden) appears to be erroneous as the text refers to Beach Road, Colwyn Bay.

The grid connection will be routed in the vicinity of Bodtegwel Terrace, it runs south and west towards Fadre. The route passes c. 500m to the west of Kinmel Park and lies adjacent to the modern St George quarry (WA 446), formerly the hillfort of Dinorben (WA 67). Dinorben was a promontory fort of 2 hectares containing evidence of late Bronze Age, early Iron Age, late Roman and possibly early Medieval occupation which was completely destroyed by quarrying, and was subsequently de-scheduled. A cairn to the east of the route ascribed to the Bronze Age (WA 159) is thought more likely to be a field clearance mound, but nearby earthworks (WA 484, 485) may be prehistoric.

The route passes to the north and west of Fadre House (WA 86), which dates to the sixteenth century but has a documentary connection to the Early Medieval period and is a Listed Building.

Between Fadre and Moelfre, the route passes to the west of a cropmark indicative of a Bronze Age round barrow or a henge (WA 89). Other possible ring ditches have been identified from air photographs (WA 87, 88) but are thought to be natural features or to have been mis-located.

Near Moelfre, the route passes through fields near Pant-y-clyd where a Roman quernstone and spindlewhorl were found (WA 155, 156).

The connection route passes close to sites of known archaeological interest, although the extent of these remains is generally difficult to establish without field investigation. None of the cables leaving the substation will be buried, so the possible impact of the overhead lines on buried features and deposits will be limited to the footprint required to install each pole. Some additional impact may occur as a result of any topsoil stripping for temporary construction compounds or access tracks.

Any prehistoric material beneath the landfall chamber or trench to the substation is likely to be of regional if not national importance, on account of the contribution that its investigation would make to understanding the early human history of North Wales and other parts of the UK. Limited damage to deposits might be sustained, particularly if the damage is offset by palaeo-environmental analysis and dating. However, extensive damage to deposits, and even limited damage to direct evidence of human inhabitation (eg artefact scatters, structures, features), would be a significant adverse effect.

None of the recorded sites in the vicinity of the substation and transmission line are Scheduled Monuments, nor is it suggested that they are of national importance. However, some of the sites close to the proposed connections may be of local or regional importance, and Dinorben hillfort was considered

to be of national importance before it was destroyed by quarrying. The forms of site in the vicinity of the connection route, especially on the higher ground, are indicative of general activity in the area in the prehistoric, Roman and Medieval periods. Consequently, it is possible that artefacts, features and deposits of local, regional or even national importance might be uncovered in the course of construction. With the exception of the landfall chamber, trench and substation, the footprint of each impact will be very small. As a result, the actual effect on even an important site is unlikely to be significant.

12.2.2 *Operational Impacts*

The importance of several buildings close to the transmission line route is such that they have become listed buildings. Similarly, Kinmel Park has been included in the Register of Landscapes and Gardens of Special Historic Interest in Wales.

12.2.3 *Cumulative Impacts*

In the event that connection options from several offshore wind farms come ashore in the region, then it is conceivable that the construction of Rhyl Flats wind farm may have an additional cumulative effect on terrestrial archaeology. The possible impacts identified above are highly localised and seem unlikely to add substantially to general levels of attrition. Moreover, archaeological information arising from the development will feed back into local and national monument records and inform subsequent curatorial decisions. Consequently, the development may have a beneficial cumulative effect on terrestrial archaeology.

12.2.4 *Mitigation*

Pre-construction

Archaeological coring across the foreshore, provided for in respect of marine mitigation (see *Section 9*), will continue to the landfall junction chamber and along the extent of any trenches required between the chamber and the substation. Where Holocene material is apparent, provision will be made for complete recovery of cores. If suitable horizons are identified, provision will be made for palaeo-environmental assessment and radiocarbon dating of sub-samples, as provided for the marine and foreshore cores. The assessment and dating will be carried out sufficiently in advance of construction to inform a written scheme of investigation (WSI) for the construction phase. The WSI will be reviewed in consultation with Cadw and Clwyd Powys Archaeological Trust.

A walkover survey of the actual line of the connection will be carried out. Available air photographs will be reviewed.

In the event that earthwork or cropmark features are identified from the walkover and/or review of air photographs, then these will be marked as exclusion zones on scheme masterplans, including contract documents. Where

an exclusion zone would impinge on construction and an archaeological origin to the feature is suspected, then further archaeological investigation (eg geophysical survey, evaluation trenching) will be undertaken to resolve the situation.

Construction

Subject to the provisions of the WSI, an archaeological watching brief will be carried out during the following activities, where appropriate:

- groundworks associated with construction of the substation and compound;
- groundworks associated with the installation of any temporary compounds and access tracks; and
- groundworks associated with the installation of selected poles.

12.2.5

Summary

Implementation of the mitigation proposals will avoid or reduce any significant adverse effects arising in respect of the landfall chamber and trench to the substation.

It is considered unlikely that installation of the overhead lines will have a significant adverse effect even without mitigation, but provision has been made for measures that will further reduce the scope for accidental damage to hitherto unrecognised sites.

The residual effect of the proposed development on the archaeological heritage is will not be significant and where mitigation generates additional information about human inhabitation of the area the residual effect is likely to be positive.

12.3

AIRBORNE NOISE

12.3.1

Construction Impacts

The construction of an electricity substation will require the delivery of ready mix concrete for the floor base and equipment bases, the delivery of necessary electrical equipment (transformers, switch gear, over-head pylons, etc) and the construction of the control building.

Delivery of ready mix concrete is likely to be limited to no more than a few days once the site has been prepared. Installation of transformers and switch gear may require a small crane / fork lift truck to lift equipment into place from the transportation vehicle.

The construction of the control buildings will be similar to the construction period of a small dwelling without the need for internal finishes.

Unless soil conditions require the installation of piles, it is not foreseen that construction of the electricity substation will result in a substantial noise impact upon neighbouring properties.

Construction of the cable route will be undertaken using conventional construction equipment comprising one or two hydraulic excavators. Excess arisings during excavation would be removed by road, which may give rise to some HGV movements.

Construction will only occur during the day light hours when background noise levels are higher.

All construction activities will be carried out following the relevant guidance (see *Mitigation* below) and no significant impacts are anticipated.

12.3.2 *Operational Impacts*

Background

Two options for the location of the substation exist. These are:

- offshore at the wind farm site; or
- onshore.

If the substation is located offshore at the potential wind farm site, then noise emission from the electricity substation will not have any effect upon the noise environment at any locations onshore.

If the electricity substation is located onshore then there is the potential for substation noise to have an impact upon neighbouring properties.

The location identified for the installation of the electricity substation is south of Ty Mawr Holiday Park and west of Term-y-castell Road in Towyn. (Grid Ref.: 296850 378700).

This location is situated within fields with dwellings located 330 – 350 m to the east and the potential for caravans to be located 250 m to the north.

Determining Emissions from a Substation

The proposed substation will convert an MV line voltage up to a 132 kV line voltage. *Figure 4.2* details an example of such a substation. This substation is located at an existing wind farm development in Carno, Mid-Wales. To determine the level of noise emissions from this source, measurements were carried out of the noise emissions from the substation compound. The resulting measurements (see *Volume V, Annex N*) determined that the noise

emissions from the compound had a tonal character which would attract a 5 dB penalty when assessed in accordance with the tonal assessment procedure detailed within the DTI NWG Recommendations. This is equivalent to the 5 dB acoustic feature penalty applied to a specific noise source within BS 4142 : 1997 to determine the rated noise level.

The wind speed conditions experienced when undertaking the substation noise measurements were between 12 – 18 m/s when measured at 10 m height. This will have resulted in the substation experiencing its maximum load due to turbine operation. The site at which these measurements were performed has a maximum output of 33.6 MW. The measurements are representative of the character of the noise emissions that will occur from the proposed substation for Rhyl.

Predictions of the potential additional noise from the cooling fans, based upon a fan duty of $6 \text{ m}^3 \text{ s}^{-1}$ and 150 Pa, indicate that substation noise may be raised by a further 2 – 3 dB LAeq. This would result in a rated noise level of 32 – 36 dB LAeq. This will only occur when hot weather is experienced in combination with high wind speeds at the wind farm. This is unlikely to be a common occurrence.

Impacts

Using the measurements made of the existing substation, it is predicted that the rated noise level of the proposed substation at neighbouring properties will lie between 30 – 33 dB LAeq for separation distances ranging from 330 – 250 m respectively. This should be compared with the minimum measured background noise level at Happy Days Holiday Park of 24 dB LA90,10 min. This level difference indicates that there is the potential for the substation to be audible at external locations to neighbouring dwellings during the quietest night-time periods. However, the predicted rated noise level and measured background noise levels fall outside the scope of BS 4142 : 1997. As such the incident rated noise levels are considered very low and are unlikely to give rise to any complaints due to noise.

Quiet Daytime background noise levels range from as low as 32 dB LA90,10 min with an average measured level of 41 dB LA90,10 min. This indicates that for a majority of time, substation noise emissions are rated as ‘of marginal significance’ tending towards a positive indication of complaints being unlikely, when assessed using the methodology within BS 4142 : 1997.

It should be borne in mind that the assessment of background noise levels are indicative of the environment during low wind speed conditions, at the quietest times during the Night and Quiet Daytime period.

12.3.3

Cumulative Impacts

There will be no cumulative impact from the construction or operation of the electricity substation.

12.3.4 *Mitigation*

To control noise from the construction of the onshore proposals, it is appropriate that the guidance contained within *BS 5228 : 1997 Noise and vibration control on construction and open sites Part 1 : Code of practice for basic information and procedures for noise and vibration control* is followed. This will minimise the potential for disturbance by any construction activity.

No mitigation measures are necessary for operational noise as no impacts are anticipated.

12.3.5 *Summary*

Noise associated with the construction and operation of the electricity substation has been assessed.

Operation of the electricity substation is not envisaged to give rise to complaints from neighbouring dwellings during daytime and evening operation.

During late night periods, when wind speeds are low, there is the potential for electricity substation noise to be audible. However, incident rated noise levels will range between 30 – 33 dB L_{Aeq} (for separation distances of 330 – 250 metres respectively) when background noise levels are below 30 dB L_{A90} . In these circumstances, an assessment of complaints using BS 4142 is not applicable for incident rated levels of 35 dB or below. Internal noise will be below 30 dB L_{Aeq} , the level above which sleep disturbance may occur.

Overall the impacts are not anticipated to be significant.

12.4 *TRAFFIC AND TRANSPORTATION*

12.4.1 *Impact Assessment - Underground Cable*

Construction of the cable route would be undertaken using conventional construction equipment comprising one or two hydraulic excavators which would be brought to the construction site via the established local road network. Cable drums would be brought to site on conventional low loader vehicles. During the excavation works soils and excavated arisings would be stored adjacent to the cable trench pending re-use to cover the buried cables. Should there be any excess arisings then these would be removed by road to a suitable disposal point and it is anticipated that this may give rise to several HGV movements. The timescale for this work is expected to be approximately three months. The timing of works will be discussed with landowners and the Local Authority to minimise disruption to local road users.

No significant traffic and transportation effects are anticipated during either construction or operation of the cable route.

12.4.2 *Impact Assessment – Substation*

The construction of an electricity substation will require the delivery of ready mix concrete for the floor base and equipment bases, the delivery of necessary electrical equipment (transformers, switch gear, over-head pylons, *etc*) and the construction of the control building.

Delivery of ready mix concrete is likely to be limited to no more than a few days once the site has been prepared. Installation of transformers and switch gear may require a small crane / fork lift truck to lift equipment into place from the transportation vehicle.

The construction of the control buildings will be similar to the construction period of a small dwelling without the need for internal finishes.

Traffic and transportation effects will be avoided by the implementation of measures, including the following:

- informing police and highway authorities;
- implementation of traffic management measures (particularly for abnormal loads); and
- agree routes with the local authority.

No significant traffic and transportation effects are anticipated during either construction or operation of the substation.

12.4.3 *Impact Assessment – Overhead Line*

All construction would be undertaken in accordance with the Distribution Network Operator's standard practice and policies. A detailed Construction Method Statement would be agreed with the local authority and with the Distribution Network Operator prior to construction of the line.

Wooden poles do not require heavy erection equipment. Apart from the initial pole delivery, most equipment is no larger than typical agricultural machinery. Typically, construction would involve about six vehicles including a four wheel drive lorry, a JCB and Land Rovers which would access the construction route via the existing established road network. The vehicles would generally access the pole positions across fields via internal farm gates between the fields.

The trident poles are assembled on site. They are planted directly into the ground, therefore it is not anticipated that there will be any requirement for deliveries of concrete or backfill material.

Between five and ten poles would be erected per day, so time spent at any single location is short. The entire route should be connected within one month. Work on site would usually be confined to the hours of 0700 to 1900, unless special conditions apply.

Poles and equipment would be transported to the vicinity of the grid connection route by lorry. Excavations would be made by a JCB-type vehicle, and poles erected using special equipment attached to that vehicle. The excavation would be backfilled and consolidated using the excavated material. Baulks may be used where the poles would be subject to stress from wind.

The stringing of the conductors between the poles would involve all-terrain vehicles and light winches.

Access for construction and ongoing maintenance would give due consideration to farming and other activities.

12.4.4 *Mitigation Measures*

Measures in addition to those listed below are unlikely to be required.

- access to the route for construction vehicles and personnel;
- pre-construction surveys;
- attention to timing of works;
- any requirements for clearance provisions and traffic management on the A55 or other local roads;
- informing police and highway authorities;
- implementation of traffic management measures (particularly for abnormal loads); and
- agree routes with the local authority.

12.4.5 *Summary*

Overall, due to the limited nature of the construction and maintenance activities, it is not anticipated that the onshore elements of the development, including the underground cabling, would give rise to traffic and transport effects.

The Clywd Coast is a popular tourist destination and is a key business for the local area. Residents also use the area for recreational and leisure pursuits, these including fishing, caravanning, walking on the footpaths and cycling.

The potential implications of the project to the local and wider economy may be positive and negative:

- *Potential Positive Impacts*
 - employment generation and expenditure of employees' salaries within the local economy; and
 - associated beneficial 'spin-off' effects in the local economy through the letting of sub-contracts to local suppliers.
- *Potential Negative Impacts*
 - effects of workforce demand on temporary accommodation within the available supply; and
 - effects on other economic activities along the route, such as agricultural production or tourism.

The labour force required to construct the transmission line will consist of a mix of highly specialised workers, semi-skilled staff and others. Although a large percentage of staff employed by the Contractor, supervising engineers and COWL will be drawn from the permanent staff of those organisations, it is normal practice on such projects that some local staff and site labour will be required. In addition to direct local employment described above, there may also be a small element of indirect employment. This could involve local firms providing services, goods and materials for the construction phase.

None of the potential negative impacts identified above are predicted to be significant.

Potential visual impacts to receptors along the overhead transmission line route and/or near to the location of the substation (onshore option) are dealt with in *Section 12.6*.

Other sections of the ES describe the potential impacts of the project on local residents and users of local facilities and transport networks (for example, *Section 12.6* considers visual impacts, *Section 12.4* considers the implications on the road network and public rights of way, and *Section 12.3* considers noise). These sections of the ES describe the mitigation measures that have been, and will continue to be, incorporated into the design of the project to mitigate these potential impacts on the local community.

Due to the limited nature of the construction and operational activities, it is not anticipated that the onshore elements of the development, including the underground cabling, would give rise to significant impacts on the local economy.

12.6 LANDSCAPE AND VISUAL AMENITY

12.6.1 Visual Analysis

A total of 25 viewpoints were visited during the fieldwork. Of these, eight were selected and considered representative of the main views and receptors in the study area. These are assessed below.

These viewpoints are listed in *Section 11*. The predicted views from these viewpoints are shown on *Viewpoints 26 to 33*. Photomontages and computer generated wireframes illustrate the predicted views.

The viewpoint analysis assesses the magnitude of the change in the views from each viewpoint and uses a five point scale - *very substantial, substantial, moderate, slight* and *negligible*, and also the intermediate categories of *very substantial/substantial, substantial/moderate, moderate/slight* and *slight/negligible*. The parameters that are taken into account when assessing magnitude are provided in *Annex L*.

A summary of the viewpoint analysis is presented in *Table 12.1* and the details are presented in *Annex L*.

Table 12.1 Viewpoints - Summary of Assessment

No	Viewpoint	NGR	Elevation (mAOD)	Distance from Development	Direction of View towards Rnrite	Landscape Type	Receptor	Magnitude of Change
26	A548 near Belgrano	295995 379064	4	0.9km	SE	Coastal and estuarine flats	Main road users, residents.	<i>Negligible</i>
27	A547 Rhuddlan Road near Bodoryn Cottages	297714 377231	6	1km	W	Vale farmlands	Main road users	<i>Negligible</i>
28	St Asaph Road near Bodtegwel Terrace	297006 376777	18	0.2km	W	Vale farmlands	Local road users, residents	<i>Moderate/ slight</i>
29	St George	297441 375812	60	0.8km	W	Limestone farmlands	Local road users, residents	<i>Negligible</i>
30	Junction of Nant Ddu Road and St George's Road	296741 376070	63	0.07km	W	Local road users	Limestone farmlands	<i>Moderate/ Slight</i>
31	Footpath above Fadre Farm	296312 375747	155	0.1km	E	Footpath users	Limestone farmlands	<i>Moderate/ slight</i>
32	Local road near Fadre Farm	296349 375311	122	0.25km	E	Limestone farmlands	Local road users, residents	<i>Moderate</i>
33	Summit of Moelfre Isaf	295146 373374	317	0.8km	SW	Aled Hiraethog Hills	Walkers	<i>Slight/ negligible</i>

12.6.2 Landscape Assessment

Introduction

This section draws on the findings of the review of the transmission line route, the landscape context study, the viewpoint analysis and fieldwork observations, and discusses the significance of the predicted effects on:

- the landscape fabric of the site landscape;
- the landscape character of the six landscape types; and

- the landscape designations within the study area.

Effects on Landscape Fabric

Changes to landscape fabric can arise where there would be direct or indirect physical changes to the landscape. In general, changes to landscape fabric occur only within the application boundary of a site.

There will be temporary effects on the landscape fabric of the site as the result of ground disturbance and loss of vegetation during the construction phase. However, this will be short-term and good site management together with reinstatement at the end of the construction phase will minimise the extent and duration of these effects.

There will also be temporary, long-term and reversible effects on the landscape fabric of the site, as the result of the loss of ground vegetation at the substation building, along the new access track and at the transmission line pole bases. However, the substation building, access track and transmission line pole bases will occupy a very small percentage of the site area so the losses will be small, the current use and management of the land will continue. The bunded substation area will be approximately 30 m by 40 m. There will be very limited loss of distinctive landscape features, such as hedgerows, walls or trees. This loss of vegetation is limited to the southern section of the route, south of Fadre Farm, where one dead tree and three existing trees may be felled.

Therefore, the effects of the development on the landscape fabric of the site will not be significant.

Effects on Landscape Character

Coastal and Estuarine Flats - Due to the very flat topography and the location of the transmission line route through this landscape type, there are many potential views of the transmission line within the Coastal and Estuarine Flats. However, the settlement patterns within the area are concentrated to the far north, along the coast, and much of the character area is open farmland inaccessible to the general public. The nature of the flat topography results in any vegetation within the landscape acting as a very effective screen to views within the area.

Therefore, in reality, views of the proposed transmission line within the landscape type would be limited and partially screened from many locations, and would mainly be available from only a few locations, such as the A548, the A547, and from some residential properties around Morfa Rhuddlan and the footpath adjacent to the Afon Gele.

As Viewpoint 26, A548 near Belgrano illustrates, at a distance of 0.9km from the transmission line, intervening vegetation within this flat landscape acts as an effective screen so that the transmission line and substation are only

partially visible from this distance, resulting in a negligible magnitude of change. The Coastal and estuarine flats landscape type is of low landscape quality, it is mainly outwith any local landscape designations, and already contains built development and other overhead lines. Therefore, the proposed transmission line route is not expected to have a significant effect on the character of this landscape type.

Vale Farmlands - The Vale Farmlands landscape type is also rather flat, like the Coastal and Estuarine Flats. However, trees and hedgerows are a more common feature within the landscape, with mature hedgerow trees as a particular feature.

Viewpoint 27, A547 Rhuddlan Road near Bodoryn Cottages is representative of views of the proposed transmission route from within this landscape type. At a distance of 1km from the route, a negligible magnitude of change is predicted. The Vale Farmlands landscape type is considered to be of medium landscape quality, is outwith any local landscape designations and is already crossed by electricity poles and overhead electric lines. The proposed transmission line crosses a narrow section of this landscape type, and the proposed development is not expected to have a significant effect on this landscape type.

Limestone Farmlands - This landscape type is characterised by undulating topography, woodland patches and well established hedgerows. As a result, visibility of the proposed transmission line from within this area is expected to be very intermittent and often screened by intervening topography and vegetation.

Viewpoints 29, St George, Viewpoint 30, Junction of Nant Ddu Road and St George's Road, Viewpoint 31, Footpath above Fadre Farm, and Viewpoint 32, Local road near Fadre Farm, show that the transmission line is mainly only visible from this landscape type at close proximity, such as at Viewpoint 32, and viewed at a distance within adjacent landscape types from the edges of the area, as shown by Viewpoints 29 and 30. At close proximity, such as 0.25km from the transmission line at Viewpoint 32, a moderate magnitude of change is predicted. The Limestone Farmlands landscape type is considered to be of medium quality, and is in the SLA but for much of the route through this landscape type, the poles and overhead electric lines will be seen in association with the Parc-y-Meirch Quarry or against a background of nearby woodland. Therefore, the proposed development is not expected to have a significant effect on this landscape type.

Lowland Hills - The Lowland Hills landscape type occupies a small part of the study area, characterised by an undulating landform and a patchwork of fields bounded by established hedgerows. Views across the area are intermittent and fieldwork observations suggest that views of the proposed transmission line would be confined to within very close proximity of the development.

None of the viewpoints in the viewpoint analysis were located within the Lowland hills landscape type. A short part of transmission line Route south of the A55 passes through a short stretch (approx 800m) of the very far eastern extents of this landscape type. As the only available views of the transmission line within this landscape type are likely to be within close proximity to the proposed development, Viewpoint 32, Local road near Fadre Farm could be considered as representative of views from a similar distance (0.25km). A moderate magnitude of change has been predicted from this viewpoint. The Lowland Hills landscape type is considered to be of high landscape quality, and is in the SLA. Therefore, the landscape character and quality of the Lowland hills landscape type could potentially be significantly affected in close proximity to the proposed transmission line route. However, due to the location of this short section of the transmission line route within the far eastern edge of this landscape type, any significant effects would be very limited in extent and would not affect the landscape type as a whole.

Aled Hiraethog Hills - The predicted visibility of the transmission line route within this landscape type is mainly dependant on topography, as the screening effect of vegetation is quite limited. High areas of land, such as Moelfre Isaf, afford open views over large distances. However, the transmission line route will run through a very small part of this landscape type and so views of the transmission line from this landscape type would be mainly of the sections that will be outside of this landscape type.

Viewpoint 33, Summit of Moelfre Isaf, is representative of views of the transmission line route as it travels outside of and then into this landscape type. The viewpoint is approximately 0.8km from the transmission line where a slight/negligible magnitude of change is predicted. Much of the northern section of the route is expected to be screened from view by intervening topography. The Aled Hiraethog Hills landscape type is considered to be of high/medium landscape quality. It is in the SLA and already has the two strings of high voltage overhead lines and pylons. Therefore, the proposed development is not expected to have any significant effects on the landscape character and quality of this landscape type.

Deep Valleys - The proposed transmission line routes will not pass through the Deep Valleys and the topography of this landscape type would screen all views of the proposed development from within this landscape type. Therefore, the proposed development would not result in any significant effects on this landscape type.

12.6.3 *Effects on Landscape Designations*

Special Landscape Area

Approximately half of the proposed route travels through the SLA designation. However, as the viewpoint analysis has shown, only the landscape in immediate proximity to the transmission line has the potential to be significantly affected. Viewpoint 28, St Asaph Road near Bodtegwel

Terrace, illustrates that at 0.2 km from the proposed transmission line, the magnitude of change is predicted to be moderate/slight, resulting in no significant effects on the SLA designation. However, Viewpoint 32, Local road near Padre Farm, shows that at 0.25 km from the transmission line, a moderate magnitude of change would result in a localised significant effect on the SLA. The difference between these two viewpoints is that the transmission line is seen against a background of landscape at Viewpoint 28, but at Viewpoint 32, the transmission line is silhouetted against the sky on the nearby horizon of the view.

The undulating nature of much of the landscape within the SLA means that there are expected to be only a few locations where the transmission line would be viewed at close proximity silhouetted against sky. Therefore, the transmission line route would not significantly affect the SLA as a whole.

Green Barriers

Only a small section (approximately 450m) of the proposed transmission line route is located within the Green Barriers designation. Viewpoint 26, A548 near Belgrano is located just outside of this designation, 0.9km from the proposed development and could be considered representative of some views from within this local designation. A negligible magnitude of change is predicted from this viewpoint due to the high levels of screening of the proposed development within the local landscape. Therefore, there will be no significant effects on the landscape character of the Green Barriers designation.

Coastal Zone

The proposed transmission line route will not pass through the Coastal Zone and fieldwork observations have shown that the Coastal Zone is not likely to have any clear views of the transmission lines. This is due to its distance from the route, combined with the density of built form in the intervening landscape. Therefore, there will be no significant effects on the landscape of the Coastal Zone.

12.6.4

Visual Assessment

Linear Route Receptors

The network of linear routes within the study area include:

- A roads - the A55(T), A548, A547;
- B roads - the B5381;
- minor and unclassified roads;
- the main line railway; and
- national and local footpaths and bridleways.

Motorists, cyclists, walkers and horse riders use these routes.

A Roads

Parts of the proposed transmission line route are expected to be intermittently visible from some sections of the A55(T). However, these views will only be of the transmission line as it crosses the A55(T). This is a busy route used by fast moving traffic where transmission line poles of up to 15m in height would not be a prominent feature in the view from the road. There are other existing electricity lines in the locality which either cross the A55(T) or run near to the road, and these are incidental and commonplace features of the view, and therefore, there will not be any significant effects on the visual amenity of people using the A55(T).

Potential visibility from the A548 is illustrated by Viewpoint 26, A548 near Belgrano, where a *moderate/slight* magnitude of change is predicted. This shows that there will not be any significant effects on the visual amenity of motorists, cyclists or walkers on the A548.

Intermittent visibility of the transmission line route is expected along the A547. Viewpoint 27, A547 Rhuddlan Road near Bodoryn Cottages, is representative of such views, where a *negligible* magnitude of change is predicted. However, several existing electricity routes run through the agricultural fields adjacent to the A547 providing an existing context of similar vertical forms. Intervening vegetation will partially screen some poles from view along this route of fast moving traffic. Therefore, it is not expected that there will be any significant effects on the visual amenity of motorists, cyclists or walkers on the A547.

B Roads

The only B road in the study area is the B5381 in the south of the study area. This road is bounded by generally mature roadside hedgerows, which will create effective screening so that views of the transmission line poles are only expected immediately around where the route crosses the road, just beyond Moelfre. As a result, views of the poles and overhead electric lines will be very limited and will not result in significant effects on the visual amenity of motorists, cyclists or walkers on the B5381.

Minor Unclassified Roads

Minor roads within the study area are characteristically narrow and winding with thick roadside hedgerows. The majority of views from these roads will be confined to fleeting views from field gate entrances.

Several viewpoints within the visual analysis are representative of views from local, minor roads. Viewpoint 28, St Asaph Road near Bodtegwel Terrace, Viewpoint 29, St George, Viewpoint 30, Junction of Nant Ddu Road and St George's Road, and Viewpoint 32, Local road near Fadre Farm, illustrate views from nearby local roads at distances of 0.06, 0.8, 0.07 and 0.25km (respectively) from the proposed transmission line. These predict a moderate/slight, a negligible, a moderate/slight and a moderate magnitude

of change, respectively, illustrating that there will be no significant effects on the visual amenity of motorists, cyclists and walkers along these local routes. These viewpoints are considered representative of views from all the local roads within the study area and with the viewpoints predicting no significant effects at distances ranging from between 0.06 and 0.8km, it is expected that no significant effects on visual amenity will occur for any motorists, cyclists or walkers along any local roads in the study area.

Railway Route

A passenger railway route runs along the coastline, in the far north of the study area. The existing built form of the coastal settlements will act as a screen to any views of the proposed transmission line routes (where they are above ground) from the railway route, and so no significant effects on visual amenity will occur.

Footpaths and Bridleways

There are several footpaths and bridleways within the study area, over both low and high land. The viewpoint analysis has assessed two viewpoints from footpaths within the study area, Viewpoint 31, Footpath above Fadre Farm, and Viewpoint 33, Summit of Moelfre Isaf . These viewpoints are 0.1 and 0.8km from the proposed route, respectively, and predict a moderate/slight and a slight/negligible magnitude of change, respectively. Only three footpaths cross the route of the transmission line, two of which run either side of Fadre Farm. Viewpoint 31, Footpath above Fadre Farm is one of the footpaths which crosses under the transmission line route. The viewpoint is 0.1km from the transmission route and a moderate/slight magnitude of change is predicted. This would suggest that there would be no significant effect on the visual amenity of the footpath users within the study area.

The North Wales Coast Path runs through the study area along the coast. However, due to the intervening built form and passenger railway route, no views of the proposed transmission line (where it is above ground) would be available.

Fixed Viewpoint Receptors

Other than the coastal towns and villages of Abergele, Pensarn, Belgrano, Morfa Rhuddlan, Towyn and Kinnel Bay, the study area has a generally sparse settlement pattern and few 'advertised' vantage points (on Ordnance Survey maps or indicated by brown tourist signs). Fixed viewpoint receptors are located in:

- towns;
- villages;
- individual residential properties and farmsteads; and
- leisure and recreational facilities.

Towns

There would be potential visibility of the proposed transmission route from the southern edges of some of the settlements in the study area, mainly from Belgrano and Morfa Rhuddlan. However, as Viewpoint 26, A548 near Belgrano shows, at 0.9km from the transmission line route, a negligible magnitude of change is predicted and no significant effects on the visual amenity of nearby residents would occur. Viewpoint 26 is considered as representative of views from the coastal settlements which already contain a large number of existing vertical forms and lampposts, telephone poles and transmission lines. Therefore, no significant effects on the residential amenity of local residents would be expected.

Villages

St George is the only main village within the study area, and Viewpoint 29, St George, is representative of views from the village itself. The viewpoint is located 0.8km from the proposed transmission route, although the nearest sections of the route will be screened from view by intervening vegetation, so that only the more distant northern sections of each route will be visible. As a result, a negligible magnitude of change is predicted for both routes, and so the visual amenity of the residents of St George will not be significantly affected by either of the proposed transmission routes.

Individual Residential Properties and Farmsteads

The study area has a dispersed scattering of individual residential properties. One of the nearest individual residential dwellings to the proposed transmission line route is Fadre Farm. Viewpoint 32, Local road near Fadre Farm is considered as representative of the view of the proposed development from the farm itself, and is located 0.25km from the route. A moderate magnitude of change is predicted, which would suggest a significant effect on the visual amenity of residents within Fadre Farm. Viewpoint 28, St Asaph Road near Bodtegwel Terrace is also representative of views from properties adjacent to the transmission route and at 0.2km from the route, a moderate/slight magnitude of change is predicted, which would suggest that no significant effects on the visual amenity of nearby residents would occur.

Telephone and electricity poles are a common feature of the rural landscape, and Viewpoints 27, 28, 29, 30 and 32 have existing electricity lines within the immediate vicinity of the viewpoint. Only a handful of individual properties lie within 0.3km of the proposed route, many of which will have views of existing electricity and telephone poles. Therefore, a very limited number of residential properties will be significantly affected by the proposed transmission line.

Leisure and Recreational Facilities

Recreational facilities within the area are largely confined to the coastal towns and villages in the far north of the study area, and intervening built form will

screen most views from these facilities. However, where views were available there would not be any significant effects on visual amenity, as illustrated by Viewpoint 26, A548 near Belgrano, where a moderate/slight magnitude of change would not result in any significant effects.

12.6.5 *Mitigation*

Various mitigation measures have been put in place during the design of the transmission line route, in order to minimise the effects of the proposed development. Mitigation measures include those listed below.

- The transmission lines have been routed to avoid sensitive areas, such as St George conservation area and existing woodland blocks (such as Coed y Geufron and Coed Pen-y-bryn).
- The cabling has been placed underground in the larger settlement areas of Belgrano and Towyn.
- The transmission lines have been routed a suitable distance from:
 - groups of properties (such as Bodtegwel Terrace);
 - local attractions, including Kinmel Park and Tan-y-mynydd fishing lakes; and
 - listed buildings (Fadre Farm and Bodoryn Cottages).

12.6.6 *Summary*

The effects regarding landscape and visual amenity for the transmission line route are as follows:

- *Effects on landscape fabric:* The assessment has concluded that the direct effects on the landscape fabric of the site will be minimal in extent and, therefore, acceptable in landscape terms.
- *Effects on landscape character:* The wooden transmission line poles and substation building are the main elements of the proposed development that will be visible from the surroundings and have, therefore, the potential to affect the landscape character of the study area.

The landscape assessment has shown that there will not be a significant effect on the landscape character of the Coastal and estuarine flats, Vale farmlands, Limestone farmlands, Aled Hiraethog Hills or Deep valleys landscape types. There will be significant effects on a limited area of the Vale farmlands landscape type, which will be local to the transmission line route and will not have a significant effect on the landscape type as a whole.

- *Effects on landscape designations:* The proposed transmission line route is not located within any national landscape designations. Some sections of the proposed route are located within the SLA and Green Barriers local landscape designations. Small parts of the SLA in close proximity to the proposed route are likely to be significantly affected by the proposal. However, these areas are limited within the SLA as a whole and would not significantly affect the whole SLA. The Green Barriers and Coastal Zone designations would also not be significantly affected by the proposal.
- *Effects on visual amenity:* As with regard to landscape character, the wooden transmission line poles and substation building are also the main elements of the proposed development that will be visible from the surroundings and have, therefore, the potential to affect the visual amenity of the study area.

There will be no significant effects on the visual amenity of motorists, cyclists or walkers on any of the A class, B class or minor routes through the study area, or on rail travellers using the railway line along the coast. There will also not be any significant effects on the visual amenity of walkers along the North Wales Coast Path and on the majority of footpaths and bridleways within the study area.

There will be no significant effects on the visual amenity of residents in Abergele, Pensarn, Belgrano, Morfa Rhuddlan, Towyn, Kinnel Bay or St George. Only a handful of residential properties close to the transmission line route may be significantly affected by the proposal in visual amenity terms. These include Sheep Wash, Fadre Farm and some of the properties in Bodtegwel Terrace.

Acceptability of Significant Effects

Transmission lines are a common feature of both the rural and urban environment, as are other small to medium scale vertical forms such as telephone poles and lampposts. This proposal to site a transmission line route respects the scale of the landscape, and the undulating terrain of many of the local landscape types would be very effective at containing views of the wooden transmission line poles and overhead electric lines. The location and style of the substation building on the periphery of the urban area in the north respects the existing character of the area, and the flat terrain, in conjunction with planting, will screen many views of the building. As a result, the significant effects on landscape character as a result of the proposed transmission line and substation would be very localised.

Any significant effects on visual amenity that would arise as the result of the proposed transmission line route will be extremely limited in extent and would affect only a very limited number of local residents.

Therefore, it can be concluded that the effects on landscape and visual amenity will be very limited in extent.