8 ECOLOGY

8.1 INTRODUCTION

Wetland Surveys Ireland Ltd. were commissioned by *AOS Planning* to carry out an ecological assessment of the Laois Kilkenny Reinforcement Project. The potential impacts (direct, indirect and cumulative) of the proposed development on the flora, fauna and fisheries of the study area are set out in this report.

A number of ecological surveys and reports have been carried out on the project since 2010. These reports, which have helped inform the ecological impact assessment, include the following:

- Ecological constraints report October 2010 (Stage 1 Lead Consultant's Report, Appendix, D4)[18]
- Coolnabacky substation site selection report (Stage 1 Lead Consultant's Report, Appendix G)
- Winter bird surveys undertaken over two seasons (March – April 2010 and October 2010 - April 2011) (Stage 1 Lead Consultant's Report, Appendices D7, D8 and D9; and Stage 2 Report Appendix D)[19]
- Ecological assessment of potential route corridors and route corridor selection March 2011 (Stage 1 Lead Consultant's Report, Appendices I1-I6)
- Environmental Impact Assessment Screening Report
- Appropriate Assessment Screening Report

A precautionary approach has been taken throughout the route and site selection process with the aim of avoiding, where possible, potential impacts on the ecological receptors identified. The main ecological constraints of the project were identified at the earliest possible stage.

This ecological assessment was prepared by Dr. Patrick Crushell and Mr. Barry O' Loughlin, Ecologists with *Wetland Surveys Ireland LTD.* Dr Crushell has been working in the area of nature conservation and ecological impact assessment for the past twelve years. Projects that he has been involved in include wetland inventory surveys; evaluation of proposed designated sites; restoration and management of peatland habitats; baseline ecological surveys and impact assessments of various development proposals including roads, quarries, wind-farms, waste facilities, arterial drainage schemes and residential developments; during and post-construction ecological monitoring.

Dr Crushell (BSc Applied Ecology; MSc Environmental Resource Management, PhD Environmental Sciences, MIEEM) received an honors degree in Applied Ecology from UCC, a Master's degree in Environmental Resource Management from UCD and defended his PhD at Wageningen University, the Netherlands. He is a Full Member of the Institute of Ecology and Environmental Management (IEEM).

Barry O'Loughlin (BSc Environmental Science, MSc Ecological Assessment, AIEEM) received an honors degree in Environmental Science from NUI Galway and a Master's degree in Ecological Assessment from UCC. He has worked in the field of ecological assessment and environmental management since graduating in 2008. Since joining Wetland Surveys Ireland in 2010, he has undertaken a wide range of baseline ecology surveys and contributed to a number of impact assessments of development proposals, in particular within the wind energy and electrical infrastructure sectors.

8.1.1 OBJECTIVES

The objectives of the assessment included:

- To carry out a desktop study in order to determine the previously recorded ecology of the area;
- To carry out a baseline flora and fauna survey of areas in proximity to the proposed project infrastructure;
- Evaluate the ecology of the study area;

[18] Phase 1 Lead Consultants Report May 2011 (detailed in the planning application documents)
[19] Phase 2 Lead Consultants Report March 2012 (detailed in the planning application documents)

- To predict the potential direct, indirect and cumulative impacts of the proposed development on the ecology of the area;
- To propose mitigation measures in the design, construction and operation of the project so as to minimise potential impacts on flora and fauna.

8.1.2 STATUTORY CONTEXT AND GUIDANCE DOCUMENTS

The assessment has regard to the following legislation and documents:

- Consolidated EIA Directive 2011/92/EU
- Wildlife Acts 1976-2012
- The Habitats Directive 92/43/EEC
- The Birds Directive 2009/147/EC
- The European Communities (Birds and Natural Habitats) Regulations 2011 (SI 411/11)
- European Communities (Environmental Impact Assessment) (Agriculture) Regulations 2011) (SI 456 of 2011)
- Flora (Protection) Order 1999
- European Union (Environmental Impact Assessment and Habitats) Regulations 2011 and 2012
- Smith *et al.* (2011) Best practice guidance for habitat survey and mapping in Ireland.
- DoEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland.
- EPA (2003) Advice notes on current practice (in the preparation of Environmental Impact Statements).
- EPA (2002) Guidelines on the information to be contained in Environmental Impact Statements.
- European Commission and (2002) Assessment of plans and projects significantly affecting European sites.
- Fossitt (2000) A Guide to Habitats in Ireland.
- IEEM (2006) Guidelines for Ecological Impact Assessment in the United Kingdom.
- Eirgrid (2012) Ecology Guidelines for Transmission Projects.
- DAHG (2011) Irelands National Biodiversity Plan: Actions for Biodiversity 2011 – 2016
- Laois County Development Plan 2011-2014
- Kilkenny County Development Plan 2008-2014
- European Commission Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013)

8.1.3 PROJECT DESCRIPTION

The project includes a number of components which are broken down into units for ease of description (Units 1 - 8). A description of each unit is presented in Section 2 of this EIS.

8.1.4 STUDY AREA

The study area extends from the proposed Coolnabacky 400/110kV Substation site at Coolnabacky, County Laois (c. 3 km South-west of Stradbally) to an existing ESB substation at Scart, County Kilkenny (c. 5 km East of Kilkenny City). This is a rural area and is characterised by farmland interspersed with towns, villages and small settlements that are connected by a complex road network.

The northern part of the study area (site of proposed Coolnabacky substation, section of the Athy – Portlaoise 110kV line and the northern part of the proposed Coolnabacky to Ballyragget line) is dominated by a low-lying landscape that is intensively managed for agriculture. The area is underlain by limestone, is generally quite flat and has fertile soils. This part of the study area drains towards the catchment of the River Barrow.

The central part of the study area (between Coolnabacky and Ballyragget) is characterised by the Castlecomer Plateau area, which contains higher ground extending up to 330m and is underlain by shales and sandstones. This area has an undulating hilly landscape with some low peaks and also has some low-lying valleys that are drained by tributaries of the Nore. This geology and environment means that soils are less fertile with impeded drainage and wet grassland being a prominent feature of the hillsides. Conifer plantations are common in this area. The majority of this area is located within the River Nore

catchment. The proposed Coolnabacky to Ballyragget 110kV line passes through this part of the study area.

The southern part of the study area (from Ballyragget to Kilkenny) comprises a low-lying rural landscape that is intensively managed for agriculture with a mix of improved grassland and arable crops throughout. The entire area is within the catchment of the River Nore, which runs in a North-south direction to the West. The existing Ballyragget to Kilkenny 110kV line passes through this area.

8.2 METHODOLOGY

8.2.1 CONSULTATION AND CONSTRAINTS IDENTIFICATION

As part of the ecological constraints study[20] a desktop literature review was carried out to identify features of ecological importance within the wider study area and surrounding region, including a review of sites designated for nature conservation.

To assist in gathering information about the study area and as a scoping exercise; consultation with various State Agencies and environmental Non-Governmental Organisations was undertaken. Letters and documentation were sent out to each consultee inviting them to comment on the proposed development and the issues that they feel should be addressed in the environmental assessment. The project Ecologist consulted directly with regional staff from National Parks and Wildlife Service and Inland Fisheries Ireland on a number of occasions throughout the project.

The identification of the main ecological constraints early in the project enabled a precautionary approach to be taken throughout the route and site selection process (associated with the new Coolnabacky 400/110kV Substation and the Ballyragget - Coolnabacky 110kV line route) with the aim of avoiding, where possible, potential impacts on the constraints identified.

The outcome of the constraints identification stage and subsequent route selection is included in the Stage 1 and Stage 2 Lead Consultant's Reports that accompany the application[11,21].

8.2.2 STUDY AREA IDENTIFICATION

Following the constraints study and subsequent identification of a preferred substation site at Coolnabacky and a preferred route corridor between Coolnabacky and Ballyragget, a desktop analysis of colour aerial photography and other GIS datasets of the study area was undertaken with a view to identifying potentially sensitive ecological features in proximity to the proposed development that could potentially be impacted by the proposed works. Such features included areas of semi-natural habitat such as intact hedgerows, scrub, woodlands, wetlands and watercourses. Those areas that were deemed to be of potential ecological interest were then targeted for field surveys.

Following the review of aerial photography and other GIS datasets, the areas in and adjacent to the footprint of the proposed development were visually assessed (where possible) from the main road network throughout the study area. Those areas identified as being of potential ecological interest were targeted for more detailed field surveys undertaken during September - October 2011, June-July 2012 and June 2013.

In relation to birds, the most sensitive feature identified during the initial constraints study were populations of wintering waders and wildfowl that are known to occur at wetland sites in the wider region. A detailed study of the abundance and distribution of wintering waders and wildfowl throughout the surrounding study area was undertaken over two winter seasons, the results of which are presented as an Appendix to this EIS (see Appendix 8.1).

[20] Phase 1 Lead Consultants Report May 2011 (detailed in the planning application documents)
[21] Phase 2 Lead Consultants Report March 2012 (detailed in the planning application documents)

8.2.3 ECOLOGICAL FIELD SURVEY

8.2.3.1 Multidisciplinary Walkover Survey

A multidisciplinary walkover survey was undertaken in those areas identified for detailed ecological survey (where access to survey was permitted by landowners). This survey aimed to record the habitats, flora and fauna present within the survey areas as described in the following paragraphs.

Habitat Survey

Areas of semi-natural habitat throughout the study area were surveyed following methodology as outlined in Smith *et al.* (2011). Notes were made on all semi-natural habitats encountered during the survey including notes on dominant vegetation, qualitative assessment of plant species diversity, vegetation structure, topography, drainage, disturbance and management. The habitats encountered during site visits were classified in accordance with Fossitt (2000) and where appropriate, reference is made to the EU Habitats Directive classification. Specific surveys of hedgerows and treelines were undertaken with a view to assessing their importance based on species composition, structure and management. The methodology used during the survey of hedgerows broadly followed those proposed by Murray (2003).

Species identification and nomenclature follows Parnell and Curtis (2012) for higher plants, Watson (1981) for bryophytes and Fitter *et al.* (1984) for grasses and sedges.

In addition to the habitat survey, a fauna survey was conducted to assess usage of the area by birds and mammals (see below). Considering the characteristics of the habitats present and the nature of the proposed development, it was considered unnecessary to carry out assessments of more specialised groups such as invertebrate species although incidental records of Lepidoptera (Butterflies and Moths) and Odonata (Dragonflies and Damselflies) were made.

Bird Surveys

Bird surveys were carried out at those sites identified for detailed ecological surveys during September and October 2011 and during the breeding season in June and July 2012 and June 2013. All aural and visual registrations were recorded in a field notebook. When required, binoculars were used to identify bird species. Bird identification follows Mullarney *et al.* (1999). Targeted winter bird surveys of the wider study area were also undertaken over two winter seasons (see Appendix 8.1).

Mammal Survey

A terrestrial mammal survey was carried out at those sites identified for detailed ecological surveys. Signs and tracks of mammals are the best way of assessing a site without conducting night surveys. All signs and tracks (Bang and Dahlstrom 2004) were assessed as they were encountered in the field. Suitable terrestrial mammal habitat and incidental records of other faunal groups were also noted. Particular attention was paid to those terrestrial mammals that are of conservation concern including Badgers and Otters. Potentially suitable bat roost sites and foraging habitat were also noted.

Fisheries

Walkover surveys of watercourses in the vicinity of the proposed development were undertaken. Watercourse characteristics including bankside vegetation, substrate, and flow rate were recorded. An assessment was made on the suitability of the habitat for aquatic species of conservation concern such as Salmonids, Lamprey, Freshwater Crayfish and Freshwater Pearl-mussel.

8.2.3.2 Wintering waders and wildfowl

As mentioned above, populations of wintering birds were identified as a significant ecological constraint within the overall project study area and therefore targeted surveys were undertaken during the periods March to April 2010 and October 2010 to April 2011. At monthly intervals, counts were undertaken at sites of known importance to water birds, and surveys undertaken throughout the study area of the Coolnabacky to Ballyragget 110kV line route. The area surrounding the southern part of the Ballyragget to Kilkenny line route were not included in the winter bird survey. However, the proposed works

associated with the Ballyragget to Kilkenny line only involves the upgrading of an existing line and therefore no increased collision risk to waterbirds is foreseen.

8.2.4 EVALUATION OF ECOLOGICAL SIGNIFICANCE

The impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact. It is necessary to identify the value of ecological features within the study area in order to evaluate the significance and magnitude of possible impacts.

The method of evaluating ecological significance used in this study is based on a standard approach developed by the National Roads Authority (NRA) (2009) in the ecological assessment of national road schemes and has been adopted for use in electricity transmission projects (Eirgrid 2012). The results of desktop and field surveys were used to evaluate the significance of identified ecological sites located in the study area on an importance scale ranging from international (A) - national (B) - county importance (C) - local importance, high value (D) - local importance, low value (E). Those sites identified as being of high local importance or greater were then given particular mention in the ecological assessment as 'Key Ecological Receptors' when considering the potential for significant impacts and subsequent requirement for appropriate mitigation. The criteria shown in Table 8.1 have been used in assessing ecological value within the study area. In addition to the criteria listed in Table 8.1 the evaluation of habitats and species also considers other factors such as potential ecological value, secondary supporting values where habitats may perform a secondary ecological function, and social values of an ecological feature such as educational, recreational and economic value.

Ecological Valuation Scheme(NRA 2009)
International Importance: • 'European Site' including candidate Special Area of Conservation (cSAC), candidate Site of Community Importance (cSCI), candidate Special Protection Area (cSPA), Site of Community Importance (SCI), Special Area of Conservation (SAC), or Special Protection Area (SPA). • Site that fulfils the criteria for designation as a 'European Site' (see Annex III of the Habitats Directive, as amended). • Features essential to maintaining the coherence of the Natura 2000 Network. • Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; and/or - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive. • Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl Habitat 1971). • World Heritage Site (Convention for the Protection of World Cultural & Natural Heritage, 1972). • Biosphere Reserve (UNESCO Man & The Biosphere Programme). • Site hosting significant species populations under the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals, 1979). • Site hosting significant populations under the Berne Convention (Convention on the Conservation of European Wildlife and Natural Habitats, 1979). • Biogenetic Reserve under the Council of Europe. • European Diploma Site under the Council of Europe. • Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).
National Importance: • Site designated or proposed as a Natural Heritage Area (NHA). • Statutory Nature Reserve. • Refuge for Fauna and Flora protected under the Wildlife Acts. • National Park. • Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA);

Ecological Valuation Scheme(NRA 2009)
Statutory Nature Reserve; Refuge for Fauna and Flora protected under the Wildlife Acts; and/or a National Park. • Resident or regularly occurring populations (assessed to be important at the national level) of the following: - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. • Site containing 'viable areas' of the habitat types listed in Annex I of the Habitats Directive.
County Importance: • Area of Special Amenity. • Area subject to a Tree Preservation Order. • Area of High Amenity, or equivalent, designated under the County Development Plan. • Resident or regularly occurring populations (assessed to be important at the County level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; • Species protected under the Wildlife Acts; and/or • Species listed on the relevant Red Data list. • Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive that do not fulfil the criteria for valuation as of International or National importance. • County important populations of species, or viable areas of semi-natural habitats or natural heritage features identified in the National or Local BAP, if this has been prepared. • Sites containing semi-natural habitat types with high biodiversity in a county context and a high degree of naturalness, or populations of species that are uncommon within the county. • Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.
Local Importance (higher value): • Locally important populations of priority species or habitats or natural heritage features identified in the Local BAP, if this has been prepared; • Resident or regularly occurring populations (assessed to be important at the Local level) of the following: - Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive; - Species of animal and plants listed in Annex II and/or IV of the Habitats Directive; - Species protected under the Wildlife Acts; and/or - Species listed on the relevant Red Data list. • Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or populations of species that are uncommon in the locality; • Sites or features containing common or lower value habitats, including naturalised species that are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.
Local Importance (lower value): • Sites containing small areas of semi-natural habitat that are of some local importance for wildlife; • Sites or features containing non-native species that are of some importance in maintaining habitat links.

NHA = Natural Heritage Area
BAP = Biodiversity Action Plan (these have been published for many local authority areas)

Table 8.1 Criteria used in assessing the ecological importance of sites
[Source: Guidelines for Assessment of Ecological Impacts of National Road Schemes (2009)]

8.2.5 ASSESSMENT OF IMPACTS AND IMPACT SIGNIFICANCE

The assessment of impacts is broadly based on guidance offered by the Institute of Environmental and Ecological Management (IEEM) in the published Guidelines for Ecological Impact Assessment (2006) with reference to national guidance given in Eirgrid (2012), NRA (2009), Gittings (1998) and EPA (2002). Impacts are discussed and assessed in relation to impact type (positive, neutral or negative), character and sensitivity of the affected feature, magnitude, duration, timing and frequency.

Criteria for assessing impact type and magnitude are presented in Table 8.2 and Table 8.3 respectively. In assessing the magnitude and significance of impacts it is important to consider the value of the affected feature as shown in Table 8.3.

Impact type	Criteria
Positive impact:	A change is likely to improve the ecological feature in terms of its ecological value.
Neutral	No effect.
Negative impact:	The change is likely to adversely affect the ecological value of the feature.

Table 8.2 Criteria for assessing impact type

Impact magnitude	Definition
No change:	No discernible change in the ecology of the affected feature.
Imperceptible Impact:	A change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries.
Minor Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary, but these consequences are not considered to significantly affect the distribution or abundance of species or habitats of conservation importance.
Moderate Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance.
Substantial Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect species or habitats of high conservation importance and to potentially affect the overall viability of those species or habitats in the wider area.
Major Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to be such that the overall viability of species or habitats of high conservation importance in the wider area is under a very high degree of threat (negative impact) or is likely to increase markedly (positive impact).

Table 8.3 Criteria for assessing impact magnitude

8.2.6 APPROPRIATE ASSESSMENT

The EU Habitats Directive requires an 'Appropriate Assessment' (AA) to be carried out by a competent authority where a plan or project is likely to have a significant impact on a designated European Site. As set out in Table 8.1 above, European Sites include candidate Special Areas of Conservation (cSACs) and candidate Special Protection Areas (cSPAs). An AA follows a stepwise process of up to four successive stages that need to be observed in establishing whether a plan or project can be implemented without adversely affecting the integrity of the site concerned, in accordance with articles 6(3) of the EU Habitats Directive. Stage 1 Screening is the first stage in the process and is carried out to determine the necessity for a more detailed Stage 2 Appropriate Assessment where potential impacts are deemed to be of significance. It is the responsibility of the competent authority (or consenting authority) to undertake AA.

In the case of the Laois Kilkenny Reinforcement Project an Appropriate Assessment Screening Statement (see Appendix 8.2) was prepared which can be considered by An Bord Pleanála when considering the application for planning approval. The screening statement for the Laois Kilkenny Reinforcement Project concluded that the proposed development has the potential to adversely impact the River Barrow and River Nore cSAC during the construction phase.

In those circumstances, a Natura Impact Statement (NIS) (for Stage 2 assessment) was prepared in order to further examine the risk posed by the proposed development on the conservation interests of this European site. The NIS was prepared to further assist An Bord Pleanála in the decision making process and is presented as Appendix 8.2 to this EIS.

A series of detailed mitigation measures have been developed to address the potential impacts that have been identified. These measures are presented in the Natura Impact Statement (see Appendix 8.2) where it is concluded that, should the proposed mitigation measures be adhered to, the conservation interest of the European site will not be compromised and the development will have no adverse impact on the integrity of the site as a whole.

8.3 RECEIVING ENVIRONMENT

This section describes the existing ecological environment within the study area. As the project covers such a large geographical area, the description of the receiving environment is presented in relation to each individual unit of the project (as presented in Section 2).

8.3.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

8.3.1.1 Designated Sites

The location of designated sites in relation to the proposed substation site is presented in Figure 8.1. Summary details of those sites that occur within 5 km of the site are presented in Table 8.4. It is considered that the proposed development will not have an effect on sites located further than 5 km. This evaluation is made taking into consideration the scale and characteristics of the proposed project.

Natural Heritage Areas (NHAs) are sites of national ecological importance and are offered protection under the Wildlife Amendment Act 2000. The closest designated area to the proposed substation site is Timahoe Eskers proposed Natural Heritage Area (pNHA) and National Nature Reserve (NR), located c. 400 m to the South. The site is a proposed (p) NHA having not yet gone through the formal designation process; however it is formally designated as a Nature Reserve (NR).

Candidate Special Areas of Conservation (cSACs) are sites of international importance because of the presence of listed habitats or species that are of European importance. The nearest cSAC to the substation site is the Ballyprior Grasslands cSAC located c. 3.5 km to the East, while the River Barrow and River Nore cSAC is located c. 4.5 km downstream of the site to the North-east.

Special Protection Areas (SPAs) for birds are designated based on the presence of internationally significant populations of listed bird species. The nearest designated SPA to the substation site is The River Nore SPA (Site Code: 4233) located approximately 14.7 km South-west at its nearest point. The qualifying interest of the SPA is breeding Kingfisher.

Legal protection for candidate SPAs and cSACs (European sites) in Ireland is provided by the EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC; commonly known as the 'Habitats Directive'). The Habitats Directive has been transposed into national legislation by, inter alia, SI. No. 477 of 2011 European Communities (Birds and Natural Habitats) Regulations 2011. These regulations also implement the obligations set out in the EU Birds Directive 2009. The potential impacts of the proposed substation on these sites are assessed in detail in the Natura Impact Statement presented as Appendix 8.2 of this EIS.

Name	Site Code	Distance from substation site	Notes
Timahoe Esker pNHA / NR	0421	0.4 km South-east	Timahoe Esker is located in the Northern part of the study area. The site supports broadleaved woodlands and is regarded as one of the best examples of the few remaining intact eskers in Co. Laois.
Ballyprior Grassland cSAC	2256	3.7 km East	Ballyprior grassland occurs in the northern part of the study area. The site contains orchid rich calcareous grassland, a priority habitat listed on Annex I of the EU Habitats Directive. Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco brometalia*) (* important orchid sites) (6210) is the main qualifying interest of the cSAC.
The River Barrow and River Nore cSAC / pNHA	2162	4.5 km North-east	The cSAC is designated due to the occurrence of a number of Annex I habitats and Annex II species listed in the EU Habitats Directive. The cSAC is of particular importance for two species of Freshwater Pearl Mussel along the River Nore. Seventeen plants listed in the Red Data Book occur within the cSAC.

Table 8.4 Designated and proposed designated conservation areas within 5 km of the Coolnabacky substation site

Evaluation:The closest designated site to the proposed substation is Timahoe Esker pNHA / NR located 400 metres to the South and is of national importance. The potential for impacts of the proposed development on European sites in the surroundings is addressed in the Natura Impact Statement presented in Appendix 8.2 of this EIS, a summary of which is presented in the relevant parts of Section 8.4 below.

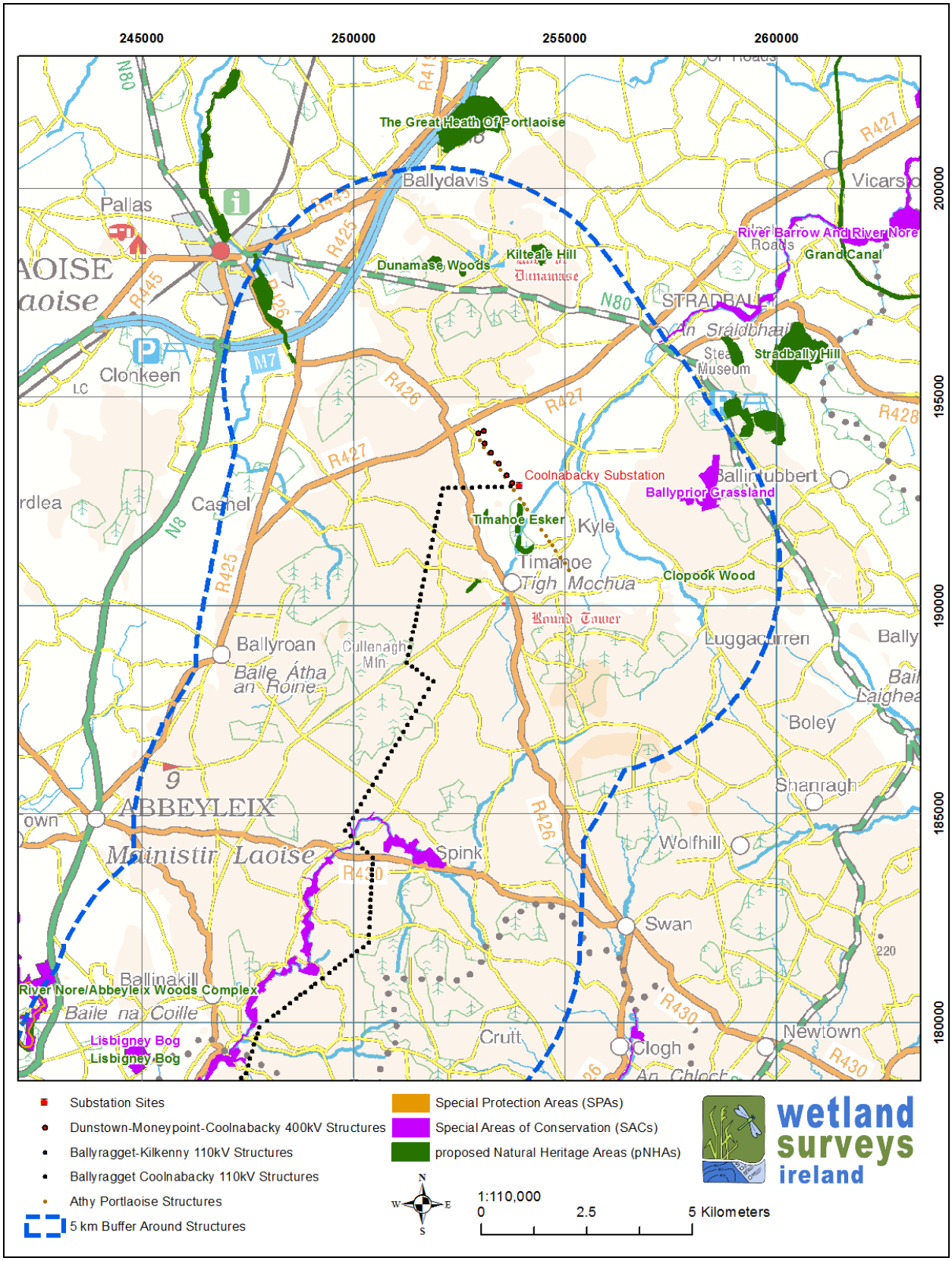

Figure 8.1 Designated and proposed designated conservation areas within 5 km of the proposed Coolnabacky substation site

8.3.1.2 Habitats and vegetation

A habitat survey of the proposed substation site was undertaken during June 2012 and the site was re-visited during June 2013. The different habitat types (as classified according to Fossitt 2000) identified were mapped in accordance with guidance outlined in Smith *et al.* (2011). All semi-natural habitat that occurs in proximity to the proposed development has been mapped with the exception of hedgerows and treelines. These linear habitats are clearly visible on the underlying aerial photographs of the habitat maps. The series of habitat maps of the areas in proximity to the main elements of the project is presented in Appendix 8.3.

The site of the proposed substation is a low-lying level field of improved grassland. The site is surrounded by hedgerows, some of which have associated drainage ditches / watercourses.

The habitats recorded within and in proximity to the substation site are described in the following section. A complete list of plant species recorded is presented in Appendix 8.4.

Improved agricultural grassland (GA1)
This is the principal habitat that occurs throughout the proposed substation site (see Plate 8.1, Appendix 8.5). The dominant grass species is Perennial Rye Grass (*Lolium perenne*) with abundant White Clover (*Trifolium repens*). The grassland is species poor and has been recently reseeded. At the time of survey in June 2012, the field had been cut for silage.

Evaluation:This habitat is of low ecological importance being intensively managed for agriculture.

Hedgerows (WL1)
Hedgerows occur around the field boundaries of the site. Species present include Hawthorn (*Crataegus monogyna*), Hazel (*Corylus avellana*), Ash (*Fraxinus excelsior*), Willow (*Salix* spp.), Wild Privet (*Ligustrum vulgare*), Blackthorn (*Prunus spinosa*), Holly (*Ilex aquifolium*), Woodrush (*Luzula sylvatica*), Harts-tongue fern (*Phyllitis scolopendrium*), Male Fern (*Dryopteris dilatata*), Herb Robert (*Geranium robertianum*), Meadowsweet (*Filipendula ulmaria*), Hogweed (*Heracleum sphondylium*), Common Gorse (*Ulex europaeus*) and Bramble (*Rubus fruticosus* agg.).

Hedgerows are typically 4-6 metres high and are relatively robust and species rich. A field drain is associated with the hedgerow that occurs along the Eastern boundary of the site, while a natural watercourse occurs along the North-western and Northern boundary (see Plate 8.2).

Evaluation:The hedgerows that occur within the site are of local value providing a refuge to flora and fauna within an intensively managed landscape. They are deemed to be of local ecological importance (lower value).

Lowland depositing river (FW2)
A small natural watercourse occurs along the north-western and northern boundary of the site (see Plate 8.2). The watercourse is fed by a spring that occurs to the West of the site as indicated on the OSI six inch map for the area. The stream appears to follow its natural channel along the north-western part of the site but feeds into a deeper straightened channel along the northern boundary. A Tufa deposit was recorded where these channels join indicating a local calcareous groundwater influence. There was little bryophyte cover at this location but an abundance of Marsh Marigold (*Caltha palustris*) growing with Water Mint (*Mentha aquatica*), Great Willowherb (*Epilobium hirsutum*) and Meadowsweet (*Filipendula ulmaria*). The watercourse is slow moving and heavily shaded by adjacent hedgerows.

Wetland flora species recorded along the edge of the stream included Soft Rush (*Juncus effusus*), Hard Rush (*Juncus inflexus*), Meadowsweet (*Filipendula ulmaria*), Yellow Iris (*Iris pseudacorus*), Lesser Water-parsnip (*Berula erecta*), Fools Watercress (*Apium nodiflorum*), Branched Bur-reed (*Sparganium erectum*), Creeping Buttercup (*Ranunculus repens*) and Marsh Bedstraw (*Galium palustre*).

The watercourse flows eastwards from the site feeding into the Timahoe River c. 500 m downstream. The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River

(designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the proposed substation site.

Evaluation:The watercourse that occurs along the northern boundary of the site is regarded as being of local importance (high value), as it is likely to provide suitable Salmonid nursery habitat downstream and is hydrologically connected to the River Barrow and Nore cSAC.

Drainage ditch (FW4)
A drainage ditch occurs along the eastern field boundary of the site. This drains into the watercourse that runs along the northern boundary. A dense growth of vegetation including Meadowsweet (*Filipendula ulmaria*), Common Nettle (*Urtica dioica*) and Hogweed (*Heracleum sphondylium*) occurs along the drainage ditch which was dry at the time of survey.

Evaluation:The drainage ditch that occurs along the eastern boundary of the site is deemed to be of local ecological importance (lower value).

Buildings and artificial surfaces (BL3)
A surfaced farm track provides access to the site from the south.

Evaluation:Habitat is of low ecological value.

Surrounding habitats
The fields surrounding the site comprise arable crops (BC1) and improved agricultural grassland (GA1). A sand pit (that has been used until recently) occurs to the South of the site, while Timahoe Esker pNHA (comprising mainly oak-ash-hazel woodland WN2) is located c. 0.4 km to the South. Calcareous springs (FP1) occur at the source of watercourses in the surroundings, one of which (adjacent to Timahoe Esker pNHA) corresponds with the priority Annex I habitat Calcareous spring with tufa formation.

Plant species
No rare or protected plant species were recorded during the site visit. The NPWS rare plant database lists only a single rare plant species, Small-white Orchid (*Pseudorchis albida*), as having been recorded from the 10 km square (S59) of the proposed substation site. The plant has not been recorded in recent times and is normally associated with unimproved grassland and heath habitat particularly in upland areas (Curtis and Thompson 2009).

Considering the habitats that occur within the site and the known occurrence of rare and protected plant species in the surrounding area, it is concluded that rare or protected plant species are most unlikely to occur within the proposed development site.

Evaluation:No rare of protected plant species were recorded during the site visit. Based on the habitats present and their known distribution, no rare or protected plant species are likely to occur within the site.

8.3.1.3 Fauna

Birds
Bird species recorded at the substation site during the breeding season included Yellowhammer, Robin, Wren, Wood Pigeon, Blue Tit, Great Tit, Chaffinch, Blackbird, Swallow, Starling, House Martin and Hooded Crow. Most of these species were observed amongst hedgerow habitat around the perimeter of the site. Sand Martins were observed from the area surrounding the site and are likely to breed within the sand pit to the south.

Yellowhammer is on the red list of Birds of Conservation Concern in Ireland (BoCCI) as the population has suffered serious decline (Lynas *et al.* 2007). However, Yellowhammer remain relatively widespread in this part of Ireland due to the abundance of arable farmland land and associated hedgerows. It is probable that Yellowhammer breed amongst the hedgerow habitat of the site and utilise the surrounding arable lands for foraging. Amber listed species that are known to occur within or in proximity of the site include Swallow, House Martin, Sand Martin, Starling and Linnet.

No raptor species were recorded during the site surveys. However, it is likely that species including Buzzard, Kestrel and Sparrowhawk occur in general area.

A detailed survey of wintering birds in the wider study area has been undertaken to inform the ecological impact assessment (the results of this survey are presented in Appendix 8.1):

- The proposed substation site is not located within an area utilised by significant flocks of water birds during winter months.
- The nearest site of interest to water birds that has been reported is the River Barrow (Cloney), located c. 13 km North-east of the proposed substation site. This site forms part of the Upper Barrow Flood-plain IBA (Important Bird Area), as listed by BirdWatch Ireland (Hunt et al. 2000). Surveys undertaken during the 2010 and 2011 winter season recorded few birds from the area with a peak count of 15 Whooper Swans, 42 Golden Plover and 20 Lapwing (see Appendix 8.1).
- Based on the habitats present on site and the known breeding and wintering range of bird species, it is concluded that the site is not of particular importance to any species of conservation concern.

Evaluation:The hedgerows on-site are of local value to widespread and common bird species. Yellowhammer is the only species of conservation concern recorded on-site. It is unlikely any other bird species of high conservation concern regularly use the area.

Mammals (including Bats)
There was no evidence of mammals recorded during the field survey of the substation site. Those mammals that have been reported from the 10 km square (S 59) of the substation site are listed in Table 8.5. These species are likely to occur in suitable habitat in the surroundings.

The main part of the site, being dominated by intensively managed grassland, is unlikely to be of value to mammal species. Watercourses downstream of the site are possibly used by Otters.

Bat species are likely to utilise the hedgerows that surround the site for foraging and commuting. No potential bat roosts (built structures / large mature trees) were identified within the site during the field survey.

Common name	Scientific name	Protected status
Fallow Deer	*Dama dama*	Wildlife Acts
West European Hedgehog	*Erinaceus europaeus*	Wildlife Acts
Mountain (Irish) Hare	*Lepus timidus*	Habitats Directive Annex V; Wildlife Acts
Eurasian Badger	*Meles meles*	Wildlife Acts
Eurasian Red Squirrel	*Sciurus vulgaris*	Wildlife Acts
European Otter	*Lutra lutra*	Annex II of EU Habitats Directive Annex IV of Habitats Directive Wildlife Acts
Daubenton's Bat	*Myotis daubentonii*	Annex IV of Habitats Directive Wildlife Acts
Leisler's Bat	*Nyctalus leisleri*	Annex IV of Habitats Directive Wildlife Acts
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Annex IV of Habitats Directive Wildlife Acts
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Annex IV of Habitats Directive Wildlife Acts

Table 8.5 Mammal species recorded from the 10 km square (S 59) of the proposed substation site
[Source: National Biodiversity Data Centre (2012)]

Evaluation:No evidence of mammal activity was recorded during a site visit. The main part of the site is unlikely to be of value to mammal species of conservation concern. Hedgerows around the perimeter of

the site are likely to provide suitable foraging and commuting habitat to protected bat species that occur in the area. Watercourses downstream of the site are likely to be utilised by Otter.

Other terrestrial fauna
Other species recorded from within and surrounding the site include Meadow Brown (*Maniola jurtina*) butterfly, Ringlet (*Aphantopus hyperantus*) butterfly and the Beautiful Demoiselle (*Calopteryx virgo*) damselfly.

Common Frog (*Rana temporia*) were recorded from a drainage feature to the South of the site and are also likely to occur along the drainage ditches within the proposed substation site.

Evaluation:Considering the habitats present on site, it is concluded that the site is unlikely to be of particular value to any terrestrial fauna species of conservation concern.

8.3.1.4 Fisheries and aquatic species

A small watercourse occurs along the northern boundary of the substation site which flows eastwards from the site and joins with the Timahoe River.

The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River (designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the proposed substation site. The Timahoe River provides important nursery waters for salmonid species such as Atlantic Salmon (Annex II species) and Brown Trout (*Salmo trutta*).

Lamprey and Freshwater Cray Fish (both listed on Annex II of the EU Habitats Directive) are likely to occur in the watercourses in proximity and downstream of the proposed development site. There are no recent records of Freshwater Pearl Mussel from the Barrow catchment (North – South 2 Project 2010).

Evaluation:The site lies within the River Barrow catchment, the main watercourses of which are designated within the River Barrow and Nore cSAC. The watercourse that bounds the northern part is hydrologically connected to this site of international ecological importance.

8.3.1.5 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.6 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater. Habitat maps of the relevant sites are presented in Appendix 8.3.

Site	Location	Evaluation	Brief description
Un-named watercourse and associated hedgerow	Northern and North-western boundary of Coolnabacky substation site	Local importance, higher value	Natural spring-fed watercourse that feeds into the River Barrow and River Nore cSAC c. 4.2 km downstream. See Plate 8.2.
Timahoe Eskers pNHA / NR	0.4 km South-east	National importance	Esker ridges with broadleaved woodland. Calcareous springs also occur.

Table 8.6 Key Ecological Receptors identified within close proximity to the proposed development

8.3.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

8.3.2.1 Designated Sites

The location of designated sites in relation to the proposed new connection from the Moneypoint to Dunstown 400kV line to the Coolnabacky Substation is presented in Figure 8.1. Summary details of those sites that occur within 5 km of the line route are presented in Table 8.7.

The closest designated area to the substation site is Timahoe Eskers proposed Natural Heritage Area (pNHA) and National Nature Reserve (NR), located c. 0.4km to the South (at its nearest point).

The nearest cSAC to the proposed line route is the Ballyprior Grasslands cSAC located c. 3.5 km to the East (at its nearest point), while the River Barrow and River Nore cSAC is located c. 4.2 km downstream to the East.

The nearest designated SPA to the line route is the River Nore SPA (Site Code: 4233) located approximately 13.5 km South-west at its nearest point. The qualifying interest of the SPA is breeding Kingfisher.

Name	Site Code	Distance from line route (at nearest point)	Notes
Timahoe Esker pNHA / NR	0421	0.4 km South-east	Timahoe Esker is located in the Northern part of the study area. The site supports broadleaved woodlands and is regarded as one of the best examples of the few remaining intact eskers in Co. Laois.
Ballyprior Grassland cSAC	2256	3.7 km East	Ballyprior grassland occurs in the northern part of the study area. The site contains orchid rich calcareous grassland, a priority habitat listed on Annex I of the EU Habitats Directive. Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco brometalia*) (* important orchid sites) (6210) is the main qualifying interest of the cSAC.
The River Barrow and River Nore cSAC/ pNHA	2162	4.2 km North-east	The cSAC is designated due to the occurrence of a number of Annex I habitats and Annex II species listed in the EU Habitats Directive. The cSAC is of particular importance for two species of Freshwater Pearl Mussel along the River Nore. Seventeen plants listed in the Red Data Book occur within the cSAC.
Kilteale Hill pNHA	0867	3.9 km North-east	The site serves as a good example of hazel woodland.
Dunamase Wood pNHA	1894	3.5 km North	Dunamase Woodland occurs in the northern part of the study area. The woodland is a good example of pedunculate oak woodland in Co. Laois.
Rock of Dunamase pNHA	0878	3.5 km North	Rock of Dunamase is located in the Northern part of the study area. The site is of ecological, historical and archaeological interest.

Name	Site Code	Distance from line route (at nearest point)	Notes
Ridge of Portlaoise	0876	4.5 km West	The ridge of Portlaoise is a raised ridge or esker comprising mainly mixed woodland. Areas of dry grassland and two sand-pits also occur. Two notable plant species have been recorded from the site: Nettle-leaved Bellflower (*Campanula trackelium*) and Blue Fleabane (*Erigeron acer*).

Table 8.7 Designated and proposed designated conservation areas within 5 km of the proposed connection (via 400kV overhead line) from the Moneypoint to Dunstown 400kV line to the Coolnabacky substation.

Evaluation:The closest designated site to the proposed line route, Timahoe Esker pNHA / NR, is located 400 metres to the South-east and is of national importance.

8.3.2.2 Habitats and vegetation

Walkover surveys were only undertaken along some sections of the 400kV line route as permission to access was not always granted. Where access was not permitted, the lands were viewed from near-by (from public roads etc.), using binoculars where necessary. Based on the presence of intensively managed agricultural lands throughout the length of the line route this approach is considered adequate. No new structures are proposed to be constructed within areas of semi-natural habitat being confined to intensively managed agricultural lands.

The habitats recorded within and in proximity to the line route are described in the following section. A complete list of plant species recorded is presented in Appendix 8.4.

Improved agricultural grassland (GA1)
This is the main habitat that occurs throughout the proposed line route (see Plate 8.1). The grassland is species poor and in many cases has been recently reseeded.

Evaluation:This habitat is of low ecological importance being intensively managed for agriculture.

Arable crops (BC1)
This habitat is agricultural land that is cultivated and managed for the production of arable crops (see Plate 8.3, Appendix 8.2). The habitat usually comprises a monoculture of a single cereal crop such as Wheat or Barley with few other species present.

Evaluation:This habitat is of low ecological importance being intensively managed for agriculture. The habitat is used by Yellowhammer, a farmland bird of high conservation concern.

Hedgerows (WL1)
Field boundaries of the study area comprise Hedgerows. The most common species that occur include Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*) and Elder (*Sambucus nigra*). Species present in the shrub layer include Rose (*Rosa* spp.), Bramble (*Rubus fruticosus* agg.), Ivy (*Hedera helix*) and Honeysuckle (*Lonicera periclymenum*). Herbaceous species that occur in the field layer include Common Nettle (*Urtica dioica*), Cleavers (*Galium aparine*) and Cock's-foot (*Dactylis glomerata*).

Hedgerows present along the line route can be categorised into two types based mainly on management:

- Type I: Managed box hedges that attain a height of c. 2-3 metres.
- Type II: Overgrown robust hedgerows with occasional tree standards which are typically 4-6 metres high and relatively species rich.

No new proposed structures or indicative works areas overlap with hedgerows. The proposed line will pass over five hedgerows between the existing Moneypoint to Dunstown 400kV line and the site of the

Coolnabacky substation, two of which conform to Type I hedgerows while three conform to Type II hedgerows.

Field drains are associated with the hedgerows that occur in the area.

Evaluation:The hedgerows that occur in the area provide ecological connectivity between areas of semi-natural habitat and are a refuge to flora and fauna within an intensively managed landscape. They are deemed to be of local ecological importance (lower value).

Lowland depositing river (FW2)
A small natural watercourse occurs along the north-western and northern boundary of the substation site. The proposed overhead line will traverse this watercourse. A more detailed description of this watercourse is presented in Section 8.3.1.2 above. The watercourse flows eastwards from the site feeding into the Timahoe River c. 500 m downstream. The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River (designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the proposed substation site.

The nearest Structure (MDC 7) to the watercourse is located c. 30 metres to the South (see Habitat Map presented in Appendix 8.3).

Evaluation:The watercourse is regarded as being of local importance (high value), as it is likely to provide suitable Salmonid nursery habitat downstream and is hydrologically connected to the River Barrow and Nore cSAC.

Drainage ditches (FW4)
A network of drainage ditches occur along field boundaries throughout the study area. These drainage ditches eventually discharge to the Timahoe River to the south-east which in turn is a tributary stream of the River Barrow and Nore cSAC.

No new proposed structures are located in the vicinity of drainage ditches.

Evaluation:The drainage ditches that occur in the area are of local ecological importance (lower value).

Plant species
No rare or protected plant species were recorded during the field surveys. The NPWS rare plant database lists only a single rare plant species, Small-white Orchid (*Pseudorchis albida*), as having been recorded from the 10 km square (S59) of the proposed development. The plant has not been recorded in recent times and is normally associated with unimproved grassland and heath habitat particularly in upland areas (Curtis and Thompson 2009).

It is concluded that those habitats present on site are unlikely to support rare or protected plant species.

Evaluation:No rare of protected plant species were recorded during the site visit. Based on the habitats present, it is concluded that no rare or protected plant species are likely to occur in the vicinity of the proposed line route.

8.3.2.3 Fauna

Birds
The bird fauna associated with the southern part of the study area is described in Section 8.3.1.3 above. Based on the presence of similar habitats along the length of the line route, it is likely that the avifaunal community is similar throughout.

A detailed survey of wintering birds of the wider study area has been undertaken to inform the ecological assessment. The results of this survey are presented in Appendix 8.1. The proposed line route is not located within an area utilised by significant flocks of water birds during winter months and no regularly used flight paths have been identified.

The nearest site of interest to water birds that has been reported is River Barrow (Cloney), located c. 13 km North-east of the proposed substation site. This site forms part of the Upper Barrow Flood-plain IBA (Important Bird Area), as listed by BirdWatch Ireland (Hunt *et al.* 2000). Surveys undertaken during the 2010 and 2011 winter season recorded few birds from the area with a peak count of 15 Whooper Swans, 42 Golden Plover and 20 Lapwing (see Appendix 8.1).

Evaluation:The hedgerows on-site are of local value to widespread and common bird species. Yellowhammer is the only species of conservation concern recorded on-site. It is unlikely any other bird species of high conservation concern regularly use the area.

Mammals (including Bats)
There was no evidence of mammals recorded during the field surveys undertaken. Those mammals that have been reported from the 10 km square (S 59) of the line route are listed in Table 8.8. These species are likely to occur in suitable habitat in the study area.

Bats are likely to utilise the hedgerows in proximity to the line route for foraging and commuting. No potential bat roosts (built structures / large mature trees) were identified along the route.

All of the new proposed structure locations are within intensively managed agricultural lands that are of low value to terrestrial mammals.

Common name	Scientific name	Protected status
Fallow Deer	*Dama dama*	Wildlife Acts
West European Hedgehog	*Erinaceus europaeus*	Wildlife Acts
Mountain (Irish) Hare	*Lepus timidus*	Wildlife Acts; Annex V of the Habitats Directive
Eurasian Badger	*Meles meles*	Wildlife Acts
Eurasian Red Squirrel	*Sciurus vulgaris*	Wildlife Acts
European Otter	*Lutra lutra*	Annex II of EU Habitats Directive Annex IV of Habitats Directive Wildlife Acts
Daubenton's Bat	*Myotis daubentonii*	Annex IV of Habitats Directive Wildlife Acts
Leisler's Bat	*Nyctalus leisleri*	Annex IV of Habitats Directive Wildlife Acts
Common Pipistrelle	*Pipistrellus pipistrellus sensu lato*	Annex IV of Habitats Directive Wildlife Acts
Soprano Pipistrelle	*Pipistrellus pygmaeus*	Annex IV of Habitats Directive Wildlife Acts

Table 8.8 Mammal species recorded from the 10 km square (S 59) of the proposed substation site
[Source: National Biodiversity Data Centre (2012)]

Evaluation:No evidence of mammal activity was recorded during field surveys. The improved grasslands and tillage fields that occur throughout most of the line route are of low value to mammal species of conservation concern. Hedgerows within the study area may provide suitable foraging and commuting habitat to protected bat species and may provide cover to other terrestrial mammals. Watercourses downstream of the line route are likely to be utilised by Otter.

Other terrestrial fauna
Other species recorded from an area to the south of the line route include Meadow Brown (*Maniola jurtina*) butterfly, Ringlet (*Aphantopus hyperantus*) butterfly and the Beautiful Demoiselle (*Calopteryx virgo*) damselfly.

Common Frog (*Rana temporia*) were recorded from a drainage feature to the South of the line route and are likely to occur along other drainage ditches in the vicinity.

Evaluation:Considering the habitats present, it is concluded that the study area is unlikely to be of particular value to any terrestrial fauna species of conservation concern.

8.3.2.4 Fisheries and aquatic species

The proposed line route is located within the River Barrow Catchment. The line crosses a small watercourse at the southern end. This watercourse flows eastwards from the substation site and joins with the Timahoe River.

The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River (designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the line route. The Timahoe River provides important nursery waters for salmonid species such as Atlantic Salmon (*Salmo salar*) (Annex II species) and Brown Trout (*Salmo trutta*).

Lamprey and Freshwater Cray Fish (both listed on Annex II of the EU Habitats Directive) are likely to occur in the watercourses in proximity and downstream of the proposed line route. There are no recent records of Freshwater Pearl Mussel from the Barrow catchment (North – South 2 Project 2010).

Evaluation:The study area lies within the River Barrow catchment, the main watercourses of which are designated within the River Barrow and River Nore cSAC. The watercourse at the southern end of the line is hydrologically connected to this site of international ecological importance.

8.3.2.5 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.9 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater. Habitat maps of the relevant sites are presented in Appendix 8.3.

Site	Location	Evaluation	Brief description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Local importance, higher value	Natural spring-fed watercourse that feeds into the River Barrow and River Nore cSAC c. 4.2 km downstream. See Plate 8.2.
Timahoe Eskers pNHA / NR	0.4 km South-east	National importance.	Esker ridges with broadleaved woodland. Calcareous springs also occur.

Table 8.9 Key Ecological Receptors identified within close proximity to the proposed development

8.3.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

The works associated this element of the project are confined to the proposed Coolnabacky substation site. The receiving environment at the site is described in Section 8.3.1 above.

The routes of the cables that will provide the connection are proposed to cross improved agricultural grassland (GA1).

8.3.4 UNIT 4 - A NEW 110KV / 38KV / MV SUBSTATION IN BALLYRAGGET, CO. KILKENNY

The location of the proposed Ballyragget 110kV/38kV/MV Substation site is in an area of improved pasture directly adjacent to the existing Ballyragget 38kV substation site.

8.3.4.1 Designated Sites

The location of designated sites in relation to the proposed new Ballyragget 110kV / 38kV / MV Substation is presented in Figure 8.2 and Figure 8.3. Summary details of those sites that occur within 5 km of the substation site are presented in Table 8.10.

The nearest NHA to the line route is the River Nore / Abbeyleix Woods Complex pNHA (Site Code: 2076) approximately 220 metres to the West. The site is a proposed (p) NHA having not yet gone through the formal designation process, much of the site has been included within the River Barrow and River Nore cSAC.

The nearest cSAC to the proposed substation site is the River Barrow and River Nore cSAC (Site Code: 2162), located c. 300 m to the West. The River Nore contains populations of two different species of Freshwater Pearl Mussel. In addition, the site is designated due to the presence of Lamprey (*Lampetra* spp.), Atlantic Salmon (*Salmo salar*), Eurasian Otter (*Lutra lutra*) and White-clawed crayfish (*Austropotamobius pallipes*), listed on Annex 2 of the EU Habitats Directive.

The nearest designated SPA to the substation site is The River Nore SPA (Site Code: 4233), located approximately 350 m West at its nearest point (at Ballyragget Substation). The qualifying interest of the SPA is breeding Kingfisher.

Name	Site Code	Distance from line (nearest point)	Notes
The River Barrow and River Nore cSAC/ pNHA	2162	300 m West	The cSAC is designated due to the occurrence of a number of Annex I habitats and Annex II species listed in the EU Habitats Directive. The cSAC is of particular importance for two species of Freshwater Pearl Mussel along the River Nore. Seventeen plants listed in the Red Data Book occur within the cSAC.
Lisbigney Bog cSAC / pNHA	0869	1.9 km West	The wetland site is of conservation significance for the occurrence of *Cladium* Fen, an Annex I priority habitat listed in the EU Habitats Directive and for supporting the rare snail *Vertigo moulinsiana*, an Annex II species listed in the EU Habitats Directive.
River Nore SPA	4233	350 m West	Designated for the protection of breeding Kingfisher. Site is mostly restricted to the river corridor.
River Nore / Abbeyleix Woods Complex pNHA	2076	220 m West	Located West of the study area, the site is a sub-site of the River Barrow and River Nore cSAC. The Abbeyleix Woods Complex consists of mixed deciduous woodland and is regarded as one of the last remaining ancient woodlands that occur throughout the country. The site is important for a number of rare and threatened habitats particularly swamp woodland. Furthermore, the flora and fauna of the site is of ecological interest.

Table 8.10 Designated and proposed designated conservation areas within 5 km of the proposed Ballyragget 110kV/38kV/MV Substation

Evaluation:The closest designated site, the River Nore / Abbeyleix Woods Complex pNHA, lies c. 200 m to the west. The nearest European site to the proposed substation site is the River Barrow and River Nore cSAC, located c. 300 m to the west.

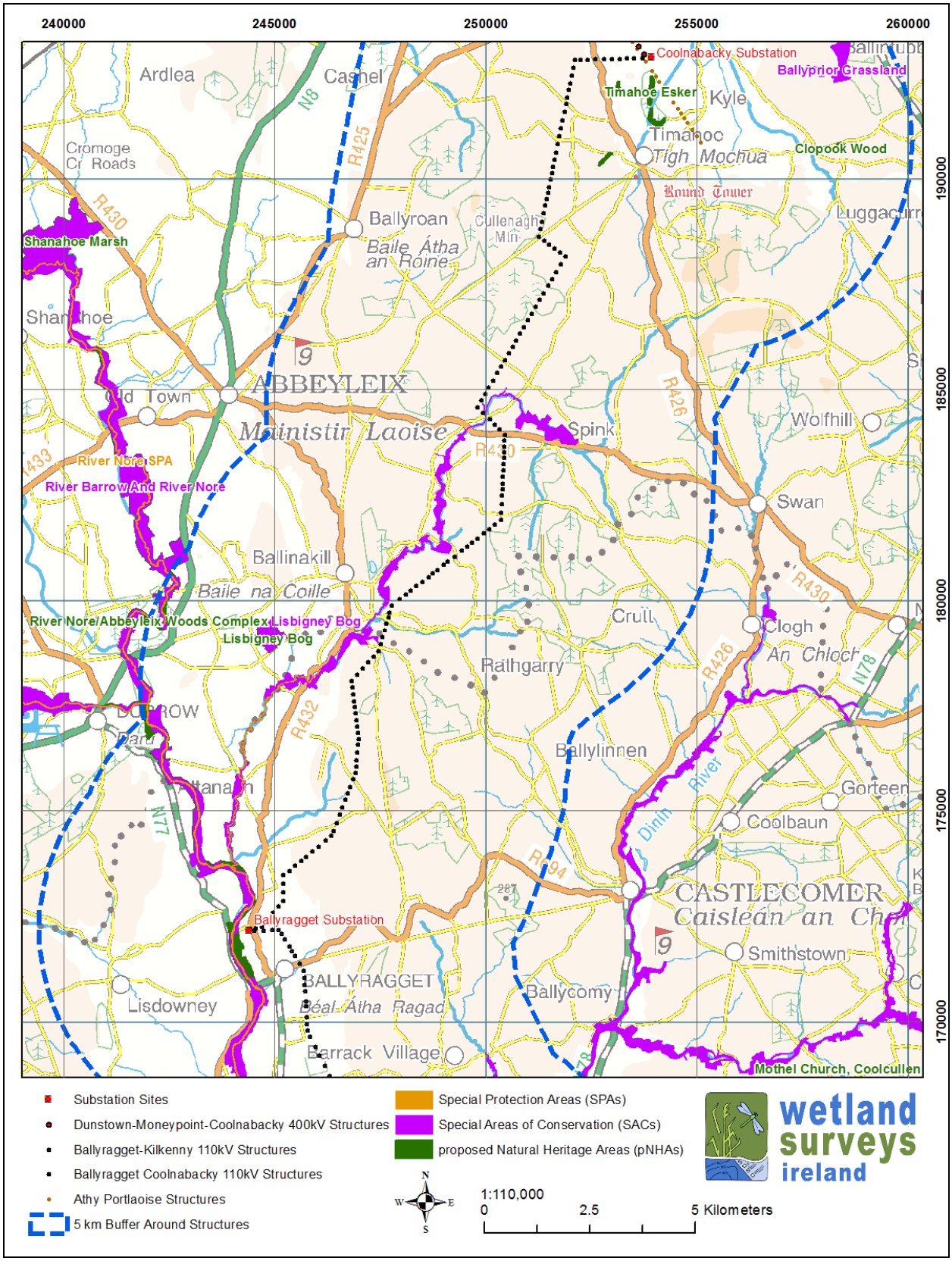

Figure 8.2 Designated and proposed designated conservation areas within 5 km of the proposed Ballyragget to Coolnabacky 110kV line route

8.3.4.2 Habitats and vegetation

Buildings and artificial surfaces (BL3)
The proposed substation site adjoins the existing Ballyragget substation (see Plate 8.4). The substation comprises control buildings, together with an array of steel structures associated with the site functioning as an operating electrical substation.

Evaluation:The habitat is of low ecological interest.

Dry meadows and grassy verges (GS2)
The footprint of the proposed substation occurs within an area of dry grassland (see Plate 8.4). The area has been improved in the past but due to lack of agricultural management has reverted to a sward of dry meadow vegetation with a dominance of rank grasses including Cock's-foot (*Dactylis glomerata*), Yorkshire Fog (*Holcus lanatus*), and False Oat-grass (*Arrhenatherum elatus*).

Other species recorded include Sweet Vernal-grass (*Anthoxanthum odoratum*), Black Sedge (*Carex nigra*), Silverweed (*Potentilla anserina*), Red Clover (*Trifolium pratense*), White Clover (*Trifolium repens*), Common Sorrel (*Rumex acetosa*), Bush Vetch (Vicia sepium), Nettle (*Urtica dioica*) and Meadow Buttercup (*Ranunculus acris*).

Evaluation:The habitat is of low ecological interest.

Plant Species
Common plant species recorded during the field survey are detailed in the habitat descriptions above and listed in Appendix 8.4. No red data book plant species were recorded within the site during the course of the site visit. Furthermore, the habitats present within the substation site are not considered likely to support any rare or protected plant species. No rare and protected plant species have previously been recorded within the 10 km square (S47) of the study area (according to the NPWS rare plant database).

8.3.4.3 Fauna

Birds
Few bird species were recorded during the site visit. Long-tailed Tit, Wren, Chaffinch, Great-tit and Wood Pigeon were recorded from a hedgerow in proximity to the site. Considering the habitats present within the site it is concluded that the area is of little value to bird species.

Evaluation:The substation site is considered to be of low value to birds.

Mammals (including Bats)
No mammal species were recorded during the site visit. Considering the habitats present within the site it is concluded that the area is of low value to mammals species of conservation concern. Those species that occur within the 10 km square (S47) of the substation are presented in Table 8.13 below.

Evaluation:The substation site is considered to be of low value to mammals.

Other fauna
Considering the habitats present within the site it is concluded that the area is most unlikely to be of value to other terrestrial species of conservation concern.

Evaluation:The substation site is of low value to other terrestrial fauna species.

Fisheries and aquatic fauna
The substation site is located within the River Nore catchment (see Section 8.3.5.4 below for description of the catchment). There are no drainage ditches or natural watercourses within or adjacent to the substation site. The nearest watercourse to the substation site is the main channel of the River Nore, c. 300 metres to the West. There is no direct surface water drainage from the site (or its surroundings) to the main channel of the River Nore.

Evaluation:The substation site occurs within the catchment of the River Nore, a river of high ecological interest. However, there are no natural watercourses or drainage features within or immediately surrounding the substation site.

8.3.4.4 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.11 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater.

Site	Location	Evaluation	Brief description
River Nore	300 m to West of Ballyragget substation	International importance	Main channel of the River Nore which is designated within the River Barrow and Nore cSAC. The main population of Nore Freshwater Pearl-mussel occurs in the main channel upstream of this location.

Table 8.11 Key Ecological Receptors identified within close proximity to the proposed development

8.3.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

8.3.5.1 Designated Sites

The location of designated sites in relation to the proposed new Ballyragget to Coolnabacky 110kV line is presented in Figure 8.2. Summary details of those sites that occur within 5 km of the line route are presented in Table 8.12.

Special Protection Areas (SPAs) for birds are designated based on the presence of internationally significant populations of listed bird species. The nearest designated SPA to the line route is The River Nore SPA (Site Code: 4233), located approximately 350m west at its nearest point (at Ballyragget Substation). The qualifying interest of the SPA is breeding Kingfisher.

Laois County Council, have listed a number of woodland areas in the county as 'Significant Tree Groups' (Laois County Council 2011). The location of these (and all other significant woodland areas), were taken into consideration at the constraints and route selection stage of the project. One such 'Significant Tree Group' that occurs to the East of Ballinakill is understood to refer to a mature demesne plantation woodland in the vicinity of Mass Lough, approximately 1 km East of the proposed line route at its nearest point. The woodland has been surveyed as part of the National Survey of Native Woodland (Perrin et al. 2008) and at that time was deemed to be of low ecological importance being dominated by mostly non-native plantation woodland. The cSAC which occurs between the proposed line route and the plantation woodland at this location comprises the main Owenbeg River channel and associated semi-natural habitats which include scrub and ash – alder dominated woodland. The terrestrial habitats within the cSAC at this location do not correspond with Annex I habitats for which the site is designated. It is concluded that no impacts are foreseen on the significant tree group as listed by Laois County Council (2011) or on terrestrial habitats within the cSAC at this location.

Name	Site Code	Distance from line (nearest point)	Notes
The River Barrow and River Nore cSAC/ pNHA	2162	Proposed line crosses cSAC at Boleybeg This section of the alignment is located within the catchment of the cSAC	The cSAC is designated due to the occurrence of a number of Annex I habitats and Annex II species listed in the EU Habitats Directive. The cSAC is of particular importance for two species of Freshwater Pearl Mussel along the River Nore. Seventeen plants listed in the Red Data Book occur within the cSAC.

Name	Site Code	Distance from line (nearest point)	Notes
Lisbigney Bog cSAC / pNHA	0869	1.9 km West	The wetland site is of conservation significance for the occurrence of *Cladium* Fen, an Annex I priority habitat listed in the EU Habitats Directive and for supporting the rare snail *Vertigo moulinsiana*, an Annex II species listed in the EU Habitats Directive.
River Nore / Abbeyleix Woods Complex pNHA	2076	220 m West	Located West of the study area, the site is a sub-site of the River Barrow and River Nore cSAC. The Abbeyleix Woods Complex consists of mixed deciduous woodland and is regarded as one of the last remaining ancient woodlands that occur throughout the country. The site is important for a number of rare and threatened habitats particularly swamp woodland. Furthermore, the flora and fauna of the site is of ecological interest.
River Nore SPA	4233	300 m West	Designated for the protection of breeding Kingfisher. Site is mostly restricted to the river corridor.
Timahoe Esker pNHA / NR	0421	400 m South (at northern end of route)	Timahoe Esker is located in the Northern part of the study area. The site supports broadleaved woodlands and is regarded as one of the best examples of the few remaining intact eskers in Co. Laois.
Ballyprior Grassland cSAC	2256	4 km East (at northern end of line)	Ballyprior grassland occurs in the northern part of the study area. The site contains orchid rich calcareous grassland, a priority habitat listed on Annex I of the EU Habitats Directive. Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco brometalia*) (* important orchid sites) (6210) is the main qualifying interest of the cSAC.

Table 8.12 Designated and proposed designated conservation areas within 5 km of the proposed Ballyragget to Coolnabacky 110kV line route

Evaluation:The closest designated site, River Barrow and River Nore cSAC lies within the corridor of the proposed line route (at Boleybeg) and is of International ecological importance.

8.3.5.2 Habitats and vegetation

A habitat survey of the proposed line route was undertaken during September - October 2011, June - July 2012 and June 2013. The structure locations, indicative works areas and indicative access routes were considered during the surveys.

The habitats recorded within and in proximity to the line route are described in the following section. A complete list of plant species recorded is presented in Appendix 8.4.

Improved Agricultural Grassland (GA1)

The main habitat that occurs within the preferred route corridor is improved agricultural grassland. The habitat is common throughout especially in the lower lying areas that are intensively managed for agriculture.

Cattle and sheep grazing along with silage crop production are the primary land uses associated with this habitat. Plant species noted within improved agricultural grassland included Perennial Rye-grass (*Lolium* perenne), Sweet Vernal-grass (*Anthoxanthum odoratum*), Crested Dog's-tail (*Cynosurus cristatus*), Cock's-foot (*Dactylis glomerata*), Ribwort Plantain (*Plantago lanceolata*), Creeping Buttercup (*Ranunculus*

repens), Broad-leaved Dock (*Rumex obtusifolius*), Thistle (Cirsium spp.), Red Clover (*Trifolium pratense*) and White Clover (*Trifolium repens*).

Wetter areas within improved fields support Soft Rush (*Juncus effusus*) and Jointed Rush (*Juncus articulatus*).

Evaluation:This common and widespread habitat is of low ecological value. The species recorded within the habitat are common throughout the wider countryside. The habitat is generally of low interest to wildlife species.

Conifer plantation (WD4)
Coniferous forestry occurs occasionally throughout the study area, especially on poorer soils associated with hillsides (see Plate 8.5). Characteristically, these stands comprise non-native conifer species planted in distinct rows and are managed for commercial timber production. Semi-mature stands were most common throughout the study area although mature plantations are also present. A network of forest roads provide access to various parts of the woodland plantations present within the study area. Plantations included pre-thicket, thicket and mature stages of growth.

Species diversity is low; plantations most commonly comprise single species stands of Sitka Spruce (*Picea sitchensis*). Other conifers that were recorded included European Larch (*Larix decidua*) and Lodgepole Pine (*Pinus contort*a). Conifer plantations in the area are fringed with narrow bands of broadleaved trees and scrub species including Willow (*Salix* spp.), Ash (*Fraxinus excelsior*), Oak (*Quercus* spp.), Alder (*Alnus glutinosa*), European Gorse (*Ulex europaeus*), Holly (Ilex aquifolium) and Bramble (*Rubus fruticosus* agg). Forest paths are fringed by Bramble (*Rubus fruticosus* agg), Willowherb (*Epilobium hirsutum*), Foxglove (*Digitalis purpurea*), Herb Robert (*Geranium robertianum*), Soft Rush (*Juncus effusus*), Tufted Vetch (*Vicia cracca*), Cock's-foot (*Dactylis glomerata*) and Yorkshire Fog (*Holcus lanatus*). Artificial Drainage Ditches (FW4) are present throughout and often surround the perimeter of plantations.

Examples of this habitat occur at Knockardagur, Garryglass, Ballinaclogh Lower and Raheenduff Big.

Evaluation:The habitat is deemed to be of low ecological importance with limited potential to support biodiversity. Conifer plantation may provide cover and nest sites to common bird and mammal species.

Scrub (WS1)
Scrub is relatively common throughout the proposed route corridor. Scrub that was recorded within the area included dense stands of individual species or a combination of a number of species including: Common Gorse (*Ulex europaeus*), Hawthorn (*Crataegus monogyna*), Willow (*Salix* spp.), Blackthorn (*Prunus spinosa*), Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosa* agg.).

Examples of where this habitat occurs include Baunree, Garryglass and Knockardagur.

Evaluation:The habitat is generally considered to be of low ecological value from a botanical perspective. The habitat is common and widespread. Scrub may provide valuable cover and nest sites to terrestrial mammals and common bird species.

Wet Grassland (GS4)
Wet grassland occurs occasionally along the proposed line route (see Plate 8.6). The habitat is generally rush dominated and persists where there is impeded drainage.

Most often, the habitat is dominated by Soft Rush (*Juncus effusus*) in association with Jointed Rush (*Juncus articulatus*) and Hard Rush (*Juncus inflexus*). Grass and sedge species are an important component of the vegetation and those recorded include Yorkshire Fog (*Holcus lanatus*), Crested Dog's Tail (*Cynosurus cristatus*), Tufted Hair-grass (*Deschampsia caespitosa*), Cock's Foot *(Dactylis glomerata*) and Black Sedge (*Carex nigra*). Broadleaved herbs are also abundant and commonly include Creeping Buttercup (*Ranunculus repens*), Devil's-bit Scabious (*Succisa pratensis*), Ribwort Plantain (*Plantago lanceolata*), Silverweed (*Potentilla anserina*), Cuckoo Flower (*Cardamine pratensis*), River-water Crowfoot

(*Ranunculus fluitans*), Meadowsweet (*Filipendula ulmaria*), and Marsh Bedstraw (*Galium palustre*). Other species that were recorded within the wet grasslands included Ribwort Plantain (*Plantago lanceolata*), Ragged-Robin (*Lychnis flos-cuculi*), Yellow Iris (*Iris pseudacorus*), Marsh Thistle (*Cirsium palustre*) and Common Sorrel (*Rumex acetosa*).

Examples of where this habitat was recorded include Ironmills, Boleybeg, Clarbarracum, Knockardagur and Garryglass.

Evaluation:The habitat is generally of local importance (lower value). It is relatively common in the wider countryside. The examples of the habitat recorded within the study area do not correspond with the more species rich Annex I habitat '*Molinia* meadows (6410)'.

Eroding upland river (FW1)
Eroding upland rivers (FW1) were recorded in elevated areas along the proposed line route. The river bed usually comprised exposed rock, gravel and cobble substrates. Water quality within these streams is generally good and they may feed into ecologically sensitive rivers further downstream. Plant species diversity is poor, often with only moss species present on the rocky substrate.

Examples of where this habitat was encountered include sites at Baunree.

Evaluation:This habitat is of local importance (higher value). Upland eroding rivers generally have a high water quality and feed into ecologically sensitive rivers downstream such as the Owenbeg River, designated as part of the River Barrow and River Nore cSAC. Upland eroding rivers provide suitable habitat for salmonids and other protected species including Otter, Freshwater Crayfish and Lamprey.

Depositing lowland river (FW2)
The proposed line route crosses a number of watercourses in lowland areas. In places, aquatic vegetation including *Ranunculus* sp. occurs. Bank side vegetation recorded include Tufted Vetch (*Vicia cracca*), Brooklime (*Veronica beccabunga*), Hogweed (*Heracleum sphondylium*), Herb Robert (*Geranium robertianum*), Fools Water-cress (*Apium nodiflorum*), Lesser Water-parsnip (*Berula erecta*), Creeping Buttercup (*Ranunculus repens*), Male Fern (*Dryopteris filix-mas*) and Hard fern (*Blechnum spicant*). A narrow line of trees often occurs along the river bank, with Ash (*Fraxinus excelsior*), Willow (*Salix* sp.) and Alder (*Alnus glutinosa*) most commonly occurring.

Examples of where this habitat was encountered include sites at Ironmills, Knockardagur, Boleybeg (see Plate 8.7) and Garryglass.

Evaluation:This habitat is of local importance (higher value). Upland eroding rivers generally have a high water quality and feed into ecologically sensitive rivers downstream such as the Owenbeg River, designated as part of the River Barrow and River Nore cSAC. Upland eroding rivers provide suitable habitat for salmonids and other protected species including Otter, Freshwater Crayfish and Lamprey.

Hedgerows (WL1)
Hedgerows form the main field boundaries throughout agricultural land within the study area (see Plate 8.8). Species that occur most commonly throughout the hedgerows include Hawthorn (*Crataegus monogyna*), Hazel (Corylus avellana), Elder (*Sambucus nigra*), Common Gorse (*Ulex europaeus*), Willow (*Salix* spp.), Holly (*Ilex aquifolium*) and Blackthorn (*Prunus spinosa*) which typically attain heights of 3-5 metres. Larger more mature trees are also common with Ash (*Fraxinus excelsior*) being the most abundant although the following species were also recorded: Alder (*Alnus glutinosa*), Sycamore (*Acer pseudoplatanus*) and Oak (*Quercus* spp.).

The understorey typically includes species such as Bramble (*Rubus fruticosus*), Ivy (*Hedera helix*), Willowherb (*Epilobium hirsutum*) Tufted Vetch (*Vicia cracca*), Meadowsweet (*Filipendula ulmaria*) and Herb Robert (*Geranium robertianum*). The more robust examples have a higher diversity of woodland flora although many of the hedgerows are poor with ground flora showing signs of enrichment with a dominance of Common Nettle (*Urtica dioica*). Many of the better quality robust hedgerows were located in the northern section of the proposed line route.

Hedgerows present along the line route can be categorised into two main types depending mainly on management:

- Type I: Managed box hedges that attain a height of c. 2-3 metres.
- Type II: Overgrown robust hedgerows with occasional tree standards which are typically 4-6 metres high.

An analysis of hedgerows throughout the length of the line route informed by both field survey and a desktop GIS analysis has identified a total of 109 hedgerows that are traversed by the proposed line. Of these, 62 conform to Type I hedgerows and 47 conform to Type II hedgerows.

A further 43 hedgerows overlap with the 'indicative works area' of structures associated with the line route. Of these, 33 conform to Type I hedgerows and 10 conform to Type II hedgerows.

Evaluation:Hedgerows serve as important corridors for wildlife linking areas of semi-natural habitat within an agricultural landscape. Good examples of hedgerow habitat form well developed intact structures serving to provide suitable habitat for terrestrial mammals, bats and birds and are generally regarded as being of local importance (low value).

Treelines (WL2)
The proposed line route corridor crosses a number of treelines. The habitat typically comprises lines of mature native and non-native trees which may include Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*), Willow (*Salix* spp.), Alder (*Alnus glutinosa*), and Oak (*Quercus* spp.). The shrub layer often consists of hedgerow species including Hawthorn (*Crataegus monogyna*), Blackthorn (*Prunus spinosa*), Gorse (*Ulex europaeus*), Holly (*Ilex aquifolium*), Hazel (*Corylus avellana*) and Elder (*Sambucus nigra*).

An analysis of treelines within the study area identified a total of 31 treelines that are traversed by the proposed line. A further 4 treelines overlap with the 'indicate works area' of structures associated with the line route.

Good examples of this habitat occur at Ironmills, Boleybeg (see Plate 8.9), Knockardagur and Baunree.

Evaluation:Treelines may provide valuable roost and foraging areas for bats and therefore may be of local importance (low value).

Mixed Broadleaved Woodland (WD1)
Mixed broadleaved woodland is uncommon along the proposed line route. The tree layer is characterised by mature native and non-native broadleaved species. Species recorded throughout these woodland areas include Oak (*Quercus* spp.), Ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*), Willow (*Salix* spp.), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Sycamore (*Acer pseudoplatanus*), Birch (*Betula pubescens*) and Hawthorn (*Crataegus monogyna)*. Species present in the ground layer include Common Nettle (*Urtica dioica*), Hard Fern (*Blechnum spicant*), Meadowsweet (*Filipendula ulmaria*), Herb Robert (*Geranium robertianum*), Lesser Celandine (*Ranunculus ficaria*), Wild Angelica (*Angelica sylvestris*) and Male Fern (*Dryopteris filix-mas*).

Examples of where this habitat occurs include Keelagh and Clarbarracum.

Evaluation: Good examples of this woodland type may provide valuable habitat for terrestrial mammals, bats and birds. Good examples of this habitat are deemed to be of local importance (low value).

Oak-Ash-Hazel woodland (WN2)
Oak-ash-hazel woodland is rare within the study area occurring at only a single location. The following description is based on the habitat recorded at Boleybawn. The tree layer is dominated by Ash with some Oak (*Quercus* spp.), Hazel (*Corylus avellana*) and occasional Alder (*Alnus glutinosa*). Species in the scrub layer include Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*) and Willow (*Salix* spp.). The ground layer comprises typical woodland flora including Lesser Celandine (*Ranunculus ficaria*), Opposite-

leaved Golden Saxifrage (*Chrysosplenium oppositifolium*), Wood Avens (*Geum urbanum*), Sanicle (*Sanicula europaea*), Bramble (*Rubus fruticosus* agg.), Herb Robert (*Geranium robertianum*), Speedwell (*Veronica* spp.), Ivy (*Hedera helix*) and Bluebell (*Hyacinthoides non-scripta*). Foxglove (*Digitalis purpurea*), Common Nettle (*Urtica dioica*), and Creeping Buttercup (*Ranunculus repens*) were also recorded. Ferns included Hard fern (*Blechnum spicant*), Hart's-tongue (*Phyllitis scolopendrium*) and Male Fern (*Dryopteris filix-mas*).

A series of streams traverse the woodland site and feed into the nearby River Barrow and River Nore cSAC just downstream.

Evaluation: The habitat present at Boleybawn (see Plate 8.10) is deemed to be of local importance, high value.

Immature woodland (WS2)
Immature woodland are areas dominated by young or sapling trees that have not yet reached the threshold heights (5 m, or 4 m in the case of wetland areas) for inclusion in woodland categories. Immature Woodland is uncommon throughout the study area. Examples of this habitat were recorded at Ballinaclogh Lower and Raheenduff Big. The plantation at Ballinaclogh Lower comprises trees between 4 – 6 m in height with Lodgepole Pine (*Pinus latifolia*) and Oak (*Quercus* spp.) being most common although other species including Alder (*Alnus glutinosa*) and Ash (*Fraxinus excelsior*) are also present along outer margins.

The site at Raheenduff Big comprises immature stands (3 – 5 m) of Sitka Spruce (*Picea sitchensis*) and occasional stands of Alder (*Alnus glutinosa*) and Ash (*Fraxinus excelsior*).

The habitat is typically fringed by narrow margins of Ash (*Fraxinus excelsior*), Willow (*Salix* spp.), Hawthorn (*Crataegus monogyna*) and Gorse (*Ulex europaeus*).

Evaluation: Immature woodland is deemed to be of local importance (low value) as it is relatively common and commercially managed for timber production. It may provide habitat to common bird and mammal species.

Buildings and artificial surfaces (BL3)
The emerging proposed line route crosses a number of tracks and roads along its length but avoids other built structures and no demolition of buildings is necessary to facilitate the development.

Evaluation:These habitats are of low ecological value. Old buildings may provide important roost sites for bats; however no buildings will be impacted during the construction or operation phase of the project.

Other habitats
Drainage ditches (FW4) are a common feature of the study area, often occurring alongside hedgerows and throughout forestry plantations. Recolonising bare ground (ED3) occurred commonly throughout the study area, and often associated with areas of in-fill. Stone walls (BL1) were present as field boundaries in some places within the study area. Dense bracken (HD1) occurs in scattered pockets at Knockardagur, growing in association with scrub (WS1).

Plant Species
Common plant species recorded during the field survey are detailed in the habitat descriptions above and listed in Appendix 8.4. During the field survey, habitats were also assessed as to their potential suitability for rare plants. The habitats present within the study area (based on their condition and the known distribution of rare species, see Table 8.13 below), are not considered likely to support any rare or protected plant species. No red data book plant species were recorded within the study area during the course of the field surveying.

Table 8.13 lists rare and protected plant species that have been recorded from the 10km squares that the proposed line route is situated within (S47, S48, S58, S59), as available from the National Parks and Wildlife Service.

10 km Square	Species	Date of last record	Location
S48	Red Hemp Nettle (*Galeopsis angustifolia*)	1898	Abbeyleix
S58	Basil Thyme (*Acinos arvensis*)	1945	Wolfhill
S59	Small White Orchid (*Pseudorchis alba*)	1806	Cullenagh to Stradbally

Table 8.13 Rare and protected plant records for 10 km squares of the study area (S47; S48; S58; S59)
[Source: National Parks and Wildlife Service, Rare Plant Database]

Evaluation:No red data book plant species were recorded within the study area during the course of the field survey. Taking into consideration the quality and type of habitats recorded it is deemed unlikely that any rare or threatened plant species occur in close proximity to the line route and proposed structure locations.

8.3.5.3 Fauna

Birds
A desktop review was undertaken to identify potential for species of conservation concern to breed within the study area by reviewing their breeding ranges. Following this, breeding bird surveys were undertaken as part of the multidisciplinary field surveys undertaken in June and July 2012 and June 2013. The breeding bird interest of the line route is summarised below.

Wintering waders and wildfowl were the subject of detailed surveys undertaken of the wider study area over two seasons. The results of this survey are presented in Appendix 8.1 and summarised in relation to the proposed Ballyragget - Coolnabacky 110kV line route in the *wintering birds* section below. Larger water bird species, such as Swan and Duck species, are particularly vulnerable to collision with power lines in situations where regularly used flight paths cross overhead lines. The results of the winter bird surveys were available and helped inform the final route selection. Bird observations were also recorded during walkover surveys of the line route during September and October 2011 indicating the avifauna assemblage of the area during the non-breeding season.

Breeding birds
The known breeding ranges of bird species of conservation concern (red listed on BirdWatch Ireland list of Birds of Conservation Concern in Ireland (BoCCI) and those listed on Annex I of the EU Birds Directive) were reviewed with reference to the *New Atlas of Breeding Birds in Britain and Ireland* (Gibbons *et al.* 1993). The results of this review are presented in Table 8.14, together with an assessment of whether suitable habitat occurs along the line route.

A list of those species recorded during field surveys undertaken in June 2012 is presented in Table 8.15. Based on the results of the desktop review and field observations it is concluded that the only species of high conservation concern likely to breed in proximity to the line route include Kingfisher (listed on Annex I of EU Birds Directive) and Yellowhammer (on BoCCI Red listed). Curlew (on BoCCI red list) was not recorded during the breeding season despite targeted surveys of potentially suitable habitat (wet grassland).

Yellowhammer was regularly recorded during field observations. Yellowhammer is on the red list of Birds of Conservation Concern in Ireland (BoCCI) as the population has suffered serious decline (Lynas *et al.* 2007). However, Yellowhammer remain relatively widespread in this part of Ireland due to the abundance of arable farmland land and associated hedgerows. It is probable that Yellowhammer breed amongst the hedgerow habitat along the line route and utilise the surrounding agricultural lands for foraging.

Kingfishers are likely to breed along watercourses within the study area. They are restricted in their distribution to riparian habitats; they nest in burrows along sandy river banks and feed on small fish. They tend to partake in low flight and spend most of the time within the river corridor. No observations of Kingfisher were made during field surveys.

Amber listed species that were recorded along the line route include Swallow, House Martin, House Sparrow, Starling and Linnet. Buzzard was the only raptor species recorded during field surveys. This species has spread its range throughout Ireland and has become established throughout the study area in recent years.

A wide range of common bird species were recorded during the field surveys. Corvids including Rook, Hooded Crow, Jackdaw and Magpie were most common in the more intensively farmed low-lying areas of the study area together with typical farmland species including Starlings, Chaffinch, Robin, Wren, Blackbird, Wood Pigeon and Mistle Thrush.

Species typically associated with woodlands, hedgerows and scrub included Long-tailed tit, Blue Tit, Great Tit, Redpoll and Goldfinch. Areas of scrub and hedgerows provide valuable breeding habitats for common passerine species including Blackbird, Robin, Wren and Chaffinch. Species associated with the conifer plantations included Wood Pigeon, Great Tit, Coal Tit and Chiffchaff.

Species	Habitat Preference	Comments
Barn Owl (*Tyto alba*) [2]	Nests in deserted dwellings / hollow trees. Forages over wet grassland and scrub areas. May use watercourses and other natural linear features as dispersal routes.	Likely to occur in wider study area. No suitable nesting habitat was identified along line route.
Common Quail (*Coturnix coturnix*)[2]	Nests in rough pastures and crop fields.	Small breeding populations largely confined to the midland counties.
Corncrake (*Crex crex*) [1, 2]	Nests in traditional hay meadows.	The species is locally extinct to the eastern part of the country and nesting pairs are mainly confined to the west and north-west of the country.
Hen Harrier (*Circus cyaneus*) [1]	Nests in mountains and upland areas in areas of heath and young conifer plantation.	Unlikely to utilise the study area during the breeding season due to an absence of suitable habitat. No recent records (Barton *et al.* 2005; Ruddock *et al.* 2012).
Curlew (*Numenius arquata*) [2]	Tends to favour moorlands, damp grasslands, bogs and rough pasture where it nests in the ground.	Unlikely to breed in proximity to line route due to lack of suitable habitat and intensive agricultural farming practices.
Kingfisher (*Alcedo atthis*) [1]	Gently-flowing lowland freshwater.	Likely to occur locally along slow moving sections of streams or rivers along the line route. Confirmed records from Square S47 in 2010 (Cummins *et al.* 2010)
Lapwing (*Vanellus vanellus*)[2]	Tend to nest in open fields particularly where the soil has been cultivated in spring and adjacent to grass pastures.	Suitable breeding habitat occurs in the northern part of the study area where much of the land is ploughed for tillage crop production.
Yellowhammer (*Emberiza citrinella*)[2]	Tends to favour areas managed for cereal crop production.	Suitable habitat occurs in the Northern part of the study area where agricultural land is primarily managed for cereal crop production.

[1] Annex 1 EU Birds Directive
[2] Birds of Conservation Concern in Ireland red listed species as reported by Lynas *et al.* (2007) known to occur in the hinterland.

Table 8.14 Breeding birds of conservation concern (red listed or Annex I listed) likely to occur based on desktop review within 10 km (S47; S48; S58; S59) of the study area
[Source: Gibbons *et al.* 1993]

Common Name	Latin Name	Conservation Status (BoCCI)
Blackbird	*Turdus merula*	
Blackcap	*Sylvia atricapilla*	
Buzzard	*Buteo buteo*	
Chaffinch	*Fringilla coelebs*	
Chiffchaff	*Phylloscopus trochilus*	
Coal Tit	*Parus ater*	
Goldcrest	*Regulus regulus*	
House Sparrow	*Passer domesticus*	Amber
House Martin	*Delichon urbicum*	Amber
Jackdaw	*Corvus monedula*	
Linnet	*Carduelis cannabina*	Amber
Magpie	*Pica pica*	
Meadow Pipit	*Anthus pratensis*	
Pheasant	*Phasianus colchicus*	
Redpoll	*Carduelis flammea*	
Reed Bunting	*Emberiza schoeniclus*	
Robin	*Erithacus rubecula*	
Rook	*Corvus frugilegus*	
Sedge Warbler	*Acrocephalus schoenobaenus*	
Song Thrush	*Turdus philomelos*	
Starling	*Sturnus vulgaris*	Amber
Swallow	*Hirundo rustica*	Amber
Whitethroat	*Sylvia borin*	
Willow Warbler	*Phylloscopus trochilus*	
Wood pigeon	*Columba palumbus*	
Wren	*Troglodytes troglodytes*	
Yellowhammer	*Emberiza schoeniclus*	Red

Table 8.15 Bird species recorded along the line route during the breeding season (June and July 2012) and their conservation status

Evaluation:Two bird species of conservation concern have been confirmed in proximity to the proposed line route during the breeding season, Yellowhammer and Kingfisher.

Yellowhammer is relatively common and widespread in this part of Ireland, occurring throughout the farmed lowland areas. Kingfisher is restricted to river corridors within the study area. It is concluded that the proposed line route is not of particular importance to breeding bird species of conservation concern and that the species recorded are mostly common and widespread and typical of the habitats recorded.

Wintering birds
As outlined in Section 8.2.3.2 above, following the constraint identification and consultation stage of the project, a targeted survey of wintering waders and wildfowl was conducted throughout the wider study area over two consecutive winter seasons (March 2010 – April 2010 and October 2010 – April 2011). The survey was undertaken to determine the preferred foraging, roost locations and regularly used flight lines. Detailed results of the surveys are presented in Appendix 8.1 together with an assessment of potential impacts. A summary of the results are presented in the following paragraphs.

The survey involved monthly visits to known water bird sites in the greater study area. In addition, surveys of the wider countryside of the study area were undertaken in an effort to identify other potential water bird sites that may not have been previously reported and to assess the use of the area by water birds.

The most significant numbers of water birds observed during the study were recorded at Durrow Curragh and Ballycolla (Coolderry), in the western part of the study area, where up to 128 Whooper Swans were recorded. For a site to be considered as nationally important for Whooper Swans it would need to regularly support in excess of 130 individuals (1% of the national population) (Boland and Crowe 2007). Based on observations of flight lines during the current study, it appears that this is a single population of Whooper Swans that alternate between the two sites. These sites are located approximately 7 km from the proposed line route.

Other water birds that were regularly recorded in good numbers at Durrow Curragh and Foxborrow included Golden Plover, Curlew and Lapwing.

During the study, it has been shown that Avonmore Ponds, a site located approximately 1 km to the west of Ballyragget Substation was regularly used by a small number of Whooper Swans (peak count of 20 Whooper Swans during March 2011). Observations of dawn and dusk flights indicate that these birds roost somewhere to the North-west, possibly at Durrow Curragh or Ballycolla. The flight line taken by these birds is a direct route from Avonmore ponds northwards towards Durrow, a direction that leads further away from the proposed line route at Ballyragget.

Wintering water birds were rarely recorded in proximity to the proposed line route despite regular surveys of potentially suitable sites and observations from suitable vantage points throughout the area. Occasional flocks of Golden Plover were recorded flying through the area. Low numbers of Mallard, Grey Heron and Moorhen were recorded in vicinity of watercourses.

Two areas in proximity to the line route were identified as being of potential value to waders and wildfowl. Firstly, the wide open valley of the Owenbeg River (a tributary of the River Nore) presents a feature in the landscape where wintering birds may direct their flight lines. Secondly, the lowlands adjacent to the Nore River between Tallyho Bridge and Ballyragget Bridge contain habitats that may occasionally be used by water birds during winter.

A list of bird species recorded during a walkover survey of the proposed line route during October 2011 is presented in Table 8.16.

Raptor species recorded during the October visit included Kestrel, Sparrowhawk and Buzzard. A single Kestrel was recorded foraging at Boleybeg, Buzzard were recorded soaring over grasslands at Knockardagur while Sparrowhawk was observed flying over an area of conifer plantation at Clarbarracum.

Common Name	**Latin Name**	**Conservation Status**
Blackbird	*Turdus merula*	
Blue Tit	*Parus caeruleus*	
Buzzard	*Buteo buteo*	
Chaffinch	*Fringilla coelebs*	
Coal Tit	*Parus ater*	
Golden Plover	*Pluvialis apricaria*	Annex I; Red
Goldfinch	*Carduelis carduelis*	
Great Tit	*Parus major*	
Grey Heron	*Ardea cinerea*	
Hooded Crow	*Corvus cornix*	
Jackdaw	*Corvus monedula*	
Jay	*Garrulus glandarius*	
Kestrel	*Falco tinnunculus*	Amber

Common Name	Latin Name	Conservation Status
Lesser Black-backed Gull	*Larus fuscus*	Amber
Long Tailed Tit	*Aegithalos caudatus*	
Magpie	*Pica pica*	
Mistle Thrush	*Tardus viscivorus*	
Moorhen	*Gallinula chloropus*	
Pied Wagtail	*Motacilla alba*	
Pheasant	*Phasianus colchicus*	
Redpoll	*Carduelis flammea*	
Reed Bunting	*Emberiza schoeniclus*	
Robin	*Erithacus rubecula*	
Rook	*Corvus frugilegus*	
Snipe	*Gallinago gallinago*	Amber
Sparrowhawk	*Accipiter nisus*	
Starling	*Sturnus vulgaris*	Amber
Wood pigeon	*Columba palumbus*	
Wren	*Troglodytes troglodytes*	

Table 8.16 Bird species recorded during field surveys along the line route undertaken during October 2011

Evaluation:Low numbers of wintering water birds were recorded in the vicinity of the proposed line route, and no regularly used flight lines were recorded. A single area along the line route was identified as being of potential value to waders and wildfowl, the wide open valley of the Owenbeg River (a tributary of the River Nore), where wintering birds may direct their flight lines, although few observations of birds were made.

It is concluded that the proposed line route is not of particular importance to bird species of conservation concern during winter.

Mammals (including bats)

Table 8.17 lists the mammal species that are provided by the National Biodiversity Data Centre (2012), as being recorded or likely to be found in suitable habitat within the study area (Hayden and Harrington 2002; NBDC 2012).

Hares, Rabbits and Fox were recorded throughout the study area. Badger are likely to occur throughout the study area although no sett entrances or other signs were recorded in proximity to the line route despite a search being carried out throughout suitable habitat that occurs along the length of the line route.

Similarly, it is likely that otters occur along some of the watercourses of the study area. Evidence of otter, in the form of spraints, was recorded during a recent survey at Boleybeg Bridge. No further evidence was recorded along watercourse sections in proximity to the line proposed route. Pine Martins are known to occur in the study area and are likely to use conifer plantations (Mac Gowan 2008).

There are a total of nine species of bat recorded as breeding in Ireland; of these six have been recorded from the 10 km squares of the study area (see Table 8.17). Bat species are afforded strict protection under the Wildlife Acts. The most valuable foraging and commuting habitat that occur within the study area include areas of woodland, treelines, hedgerows, and watercourses. It can be assumed that there is considerable bat activity during the summer season throughout these habitats within the study area. Large mature trees and old buildings would provide suitable roost sites.

Species	Suitable habitat	Protected status
Hedgehog	Yes	Wildlife Acts
Pygmy Shrew	Yes	Wildlife Acts
Rabbit	Yes - Confirmed presence	None
Mountain (Irish) Hare	Yes - Confirmed presence	Habitats Directive Annex V; Wildlife Acts
Red Squirrel	Yes	Wildlife Acts
Fallow Deer	Yes	Wildlife Acts
Wood Mouse	Yes	None
House Mouse	Yes	None
Brown Rat	Yes	None
Red Fox	Yes – Confirmed presence	None
Irish Stoat	Yes	Wildlife Acts
American Mink	Yes	None
Badger	Yes	Wildlife Acts
Otter	Yes	Habitats Directive Annex II & IV; Wildlife Acts
Pine Marten	Yes	Habitats Directive Annex V; Wildlife Acts
Grey Squirrel	Yes	None
Whiskered Bat	Yes	Habitats Directive Annex IV; Wildlife Acts
Daubentons Bat	Yes	Habitats Directive Annex IV; Wildlife Acts
Common Pipistrelle	Yes	Habitats Directive Annex IV; Wildlife Acts
Leisler's Bat	Yes	Habitats Directive Annex IV; Wildlife Acts
Soprano Pipistrelle	Yes	Habitats Directive Annex IV; Wildlife Acts
Natterer's bat	Yes	Habitats Directive Annex IV; Wildlife Acts

Table 8.17 Terrestrial mammals present within the study area
[Source: National Biodiversity Data Centre (2012)]

Evaluation: Many mammal species are strictly protected under national and international legislation. Protected species that are likely to occur in proximity to the study area include Badger, Otter and Pine Marten. The more valuable habitats that occur within the study area include scrub, woodland and watercourses.

Bats are likely to commonly occur throughout the study area and would be expected to be foraging and commuting amongst suitable habitat such as woodlands, watercourses, hedgerows and treelines. Large mature trees may provide suitable roost sites. The proposed line route will not necessitate the removal of any built structures, which often provide suitable bat roosts.

Other terrestrial fauna
Common Frog (*Rana temporia*) were recorded in wet grassland habitat and drainage ditches within the study area.

Evaluation:Considering the habitats present along the proposed line route it is concluded that the area is unlikely to be of particular value to any other terrestrial species of conservation concern.

8.3.5.4 Fisheries and aquatic fauna

The proposed line route occurs within two main River Catchments, the river Barrow to the North and the River Nore to the South. The main rivers and tributaries in both catchments form the River Barrow and River Nore cSAC, as designated under the EU Habitats Directive.

The River Nore rises in the eastern slopes of the Devil's Bit mountain in the townland of Borrisnoe, North Tipperary and flows south-eastwards through Laois and Kilkenny before merging with the River Barrow North of New Ross. The Nore flows through many towns including Castletown, Durrow, Ballyragget, Kilkenny, Brennetts Bridge and Thomastown.

Most of the freshwater streams within the Barrow catchment are important nursery waters for salmonid species including Atlantic Salmon (Annex II; EU Habitat Directive). The Timahoe River, a tributary of the

Stradbally River is located within the Barrow catchment is a salmonid nursery river. The northern part of the line route drains towards this river.

Two species of Freshwater Pearl-mussel, *Margaritifera margaritifera* and *Margaritifera durrovensis* (Annex II, EU Habitats Directive), occur within the River Barrow and Nore Catchments. Both species are of high conservation concern that requires strict protection. The hardwater form of Freshwater pearl Mussel (*Margaritifera durrovensis*) occurs along a stretch of the River Nore between Poormansbridge (upstream of Abbeyleix) and Ballyragget. The River Nore is the only location in the world that supports the hardwater form of Freshwater Pearl Mussel, *Margaritifera durrovensis* . In recent years the species has undergone a dramatic decline and is currently threatened with extinction. The more common form of Freshwater Pearl-mussel (*Margaritifera margaritifera*), is also found within the catchment of the River Barrow although there are no recent records from rivers in proximity of the proposed line route. The sub-catchments of the River Barrow that have recent records of Margaritifera margaritifera include Ballymurphy.

Most of the tributaries of the River Nore including Ironmills, Gully, Owenbeg, Glashagal, Dinin, Gloshna and Erkina are important nursery waters for salmonid species (Annex II, EU Habitats Directive). The Annex II species, Freshwater Crayfish and both River and Brook Lamprey also occur throughout many of the watercourses in the study area (NPWS 2011).

The proposed line route overflies (i.e., traverses overhead) a number of minor rivers and streams in both the Barrow and Nore catchments that are likely to serve as nursery grounds for Atlantic Salmon, Lamprey (River and Brook) and Freshwater Crayfish.

Owenbeg river

The Owenbeg River is the main river system that occurs in proximity to the proposed line route. It forms one of the main tributaries of the River Nore and a large section of the river is designated as part of the River Barrow and River Nore cSAC (Site code: 2162). The Owenbeg starts from Wolfhill, County Laois and continues south by Spink and Ironmills Bridge before entering County Kilkenny at Loughill Bridge. The Owenbeg River merges with the River Nore North of Ballyragget.

The Owenbeg River is likely to be used by a number of Annex II species listed in the EU Habitats Directive and EU Birds Directive including Otter, White-clawed crayfish, Brook Lamprey and Atlantic Salmon (Ecofact 2009).

The proposed line route crosses a narrow section of the River Barrow and River Nore cSAC along the Owenbeg River at Boleybeg.

Evaluation:This section of the proposed line route is located within the catchments of both the River Barrow and River Nore, both of which are of high ecological interest and deemed to be of international importance. This section of the proposed line route traverses (by overflying) a number of rivers and streams in both the Barrow and Nore catchments that are likely to serve as nursery grounds for Atlantic Salmon, Lamprey (River and Brook) and Freshwater Crayfish.

8.3.5.5 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.18 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater. Habitat maps of the relevant sites are presented in Appendix 8.3.

Site	Location	Evaluation	Brief description
Boleybawn woodland	Boleybawn Structure BC64 – BC65	Local importance, higher value	Narrow semi-natural woodland strip in valley with small watercourse. Site adjoins a more extensive area of woodland to North and is hydrologically connected to the River Barrow and River Nore cSAC, which occurs just downstream. See Plate 8.10.
Owenbeg River at Boleybeg	Line traverses site at Boleybeg Structure BC88 - BC89	International importance	River and adjacent habitat are designated within the River Barrow and River Nore cSAC. A narrow river bank occurs with absence of flood zone and improved grassland extends to the river bank. Bank side vegetation includes a non-continuous line of ash, hawthorn and willow. See Plate 8.7.
Wet grassland and treelines at Boleybeg	Boleybeg Structures BC83-BC85	Local importance, higher value	Area of wet grassland with good quality mature treelines dominated by Alder and Oak. See Plate 8.9.
Timahoe Eskers pNHA / NR	0.4 km South (at northern end of route)	National importance.	Esker ridges with broadleaved woodland. Calcareous springs also occur.

Table 8.18 Key Ecological Receptors identified within close proximity to the proposed development

8.3.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

The existing Ballyragget to Kilkenny 110kV line crosses a relatively flat low-lying landscape that is intensively managed for agriculture throughout its length. There are few areas of semi-natural habitat along the route, which are largely confined to hedgerows, watercourses and small pockets of scrub.

8.3.6.1 Designated Sites

The location of designated sites in relation to the existing Ballyragget to Kilkenny 110kV overhead line is presented in Figure 8.3. Summary details of those sites that occur within 5 km of the site are presented in Table 8.19.

The nearest NHA to the line route is the River Nore / Abbeyleix Woods Complex (Site Code: 2076) approximately 220 metres to the west of the Ballyragget Substation in the Northern part of the study area. The site is a proposed (pNHA), with much of the site having been included within the River Barrow and River Nore cSAC.

The line route crosses the River Barrow and River Nore cSAC at Jenkinstown, where two existing poleset structures (BK 48 and BK 49) are located adjacent to the boundary of the cSAC. The cSAC is designated for a number of Annex I habitats and Annex II species listed in the EU Habitats Directive, including Atlantic Salmon, Freshwater Crayfish and River Lamprey.

The nearest designated SPA to the existing overhead line is The River Nore SPA (Site Code: 4233) located approximately 0.3 km west at its nearest point (Ballyragget Substation). The qualifying interest of the SPA is breeding Kingfisher.

Name	Site Code	Distance from line (nearest point)	Notes
The River Barrow and River Nore cSAC/ pNHA	2162	Line crosses cSAC at Jenkinstown (just upstream of New Dinin Bridge) The entire section of the alignment is located within the catchment of the cSAC	The cSAC is designated due to the occurrence of a number of Annex I habitats and Annex II species listed in the EU Habitats Directive. The cSAC is of particular importance for two species of Freshwater Pearl Mussel along the River Nore. Seventeen plants listed in the Red Data Book occur within the cSAC.
Dunmore Cave pNHA	0401	1.5 km East	Dunmore Cave pNHA is a tourist cave and is of importance for the presence Natterer's bats (*Myotis natterer*i) (50 recorded individuals) during summer months. It is possible that this bat species hibernates in the cave amongst cracks and crevices during winter months. The site is of national importance and possibly of international importance.
Newpark Marsh pNHA	0845	1.6 km West	Newpark Marsh is a small marsh located on the outskirts of Kilkenny town. The site supports fen vegetation. The area is used as an important foraging site for three bat species. The site can be described as highly natural.
Dunmore Complex NHA	1859	1.6 km West	Dunmore Complex NHA comprises a series of natural depressions in the gravels and boulder clays of the northern outskirts of Kilkenny city which supports a diversity of wetland, woodland and old meadow habitats.
Esker Pits pNHA	0832	1.8 km East	Esker Pits pNHA is a gravel quarry comprising a mosaic of habitats including species rich calcareous grassland, small ponds, dry gravel banks, scrub woodland and marsh areas that flood during winter months. The grassland areas of the site contain a diverse range of calcareous grassland species.
Ardaloo Fen pNHA	0821	2.7 km West	Ardaloo Fen pNHA comprises a transition from improved grassland to reed swamp (*Phragmites australis*). The flooded grasslands are of particular importance for a number of waterfowl and waders. The reed swamp is important for summer migrants particularly warblers. The site encompasses a diverse wetland flora.
Inchbeg pNHA	0836	2.5 km West.	Inchbeg pNHA occurs in the central part of the study area, south of Ballyragget. The site contains an enclosed natural floodplain of the Nore river valley and supports a number of habitats including wet grassland, freshwater marsh, ponds, streams and semi-deciduous woodland. The site is locally important for many bird species including Whooper Swan, Bewick Swan, Curlew and Golden Plover.
River Nore SPA	4233	300 m West	Designated for the protection of breeding Kingfisher. Site is mostly restricted to the river corridor.

Name	Site Code	Distance from line (nearest point)	Notes
Lough Macask pNHA	1914	3.7 km West	Lough Macask pNHA is a small pond located north-west of Kilkenny that fluctuates in size throughout the year. The permanently flooded part of the site contains a number of wetland plants indicative that the site is similar to a turlough. The site contains Greater Duckweed (*Spirodela polyrhiza*) which is not found anywhere else in the country.
Archersgrove pNHA	2051	2.9 km West	The pNHA comprises scrub woodland including Ash, Hazel, Beech, Gorse and occasional conifer stands. The site is important as it contains significant numbers of Nettle-leaved Bellflower (*Campanula trachelium*). This plant is considered to be a rare species in Ireland.

Table 8.19 Designated and proposed designated conservation areas within 5 km of existing Ballyragget-Kilkenny 110kV overhead line

Evaluation:The closest designated site is located where the existing overhead line crosses the River Barrow and River Nore cSAC / pNHA at Jenkinstown. Two existing poleset structures (BK 48 and BK 49) are located adjacent to the boundary of the cSAC. The cSAC is deemed to be of international importance.

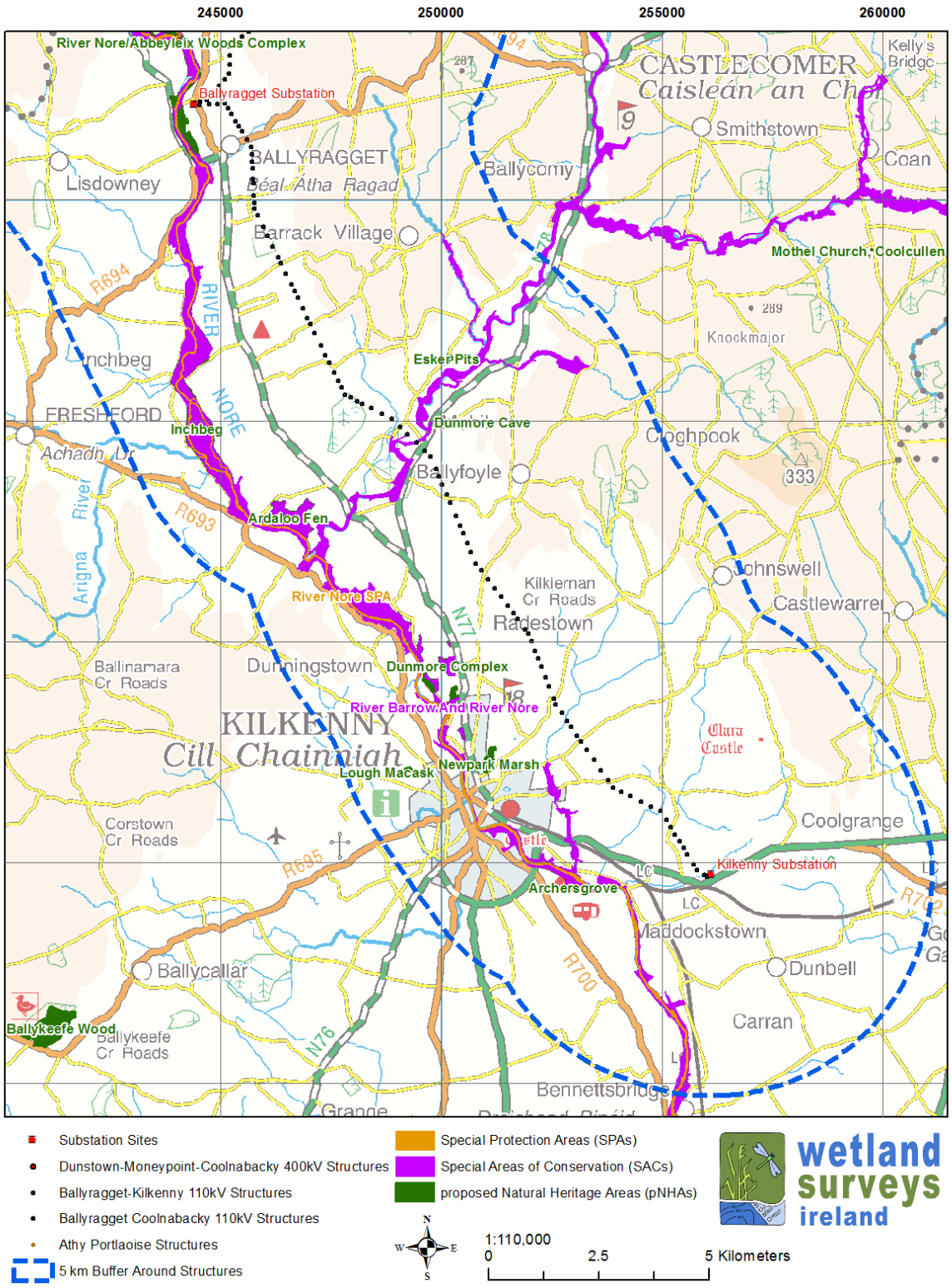

Figure 8.3 Designated and proposed designated conservation areas within 5 km of the existing Ballyragget to Kilkenny 110kV line route

8.3.6.2 Habitats and vegetation

All habitats are classified in accordance with Fossitt (2000). The following is a summary of the habitats recorded along the existing Ballyragget to Kilkenny 110kV line route.

Improved Agricultural Grassland (GA1)
This is the principal habitat that occurs throughout the area (see Plate 8.11). The main species recorded throughout this habitat include Perennial Rye-grass (*Lolium perenne*), Italian Rye Grass (*Lolium multiflorum*), Crested Dog's Tail (*Cynosurus cristatus*), Meadow Foxtail (*Alopecurus pratensis*), Yorkshire Fog (*Holcus lanatus*), Red Clover (*Trifolium pratense*), White Clover (*Trifolium repens*) and Meadow Buttercup (*Ranunculus acris*).

Evaluation:The habitat is of low ecological importance being intensively managed for agriculture.

Arable crops (BC1)
This habitat is agricultural land that is cultivated and managed for the production of arable crops (see Plate 8.12). The habitat occurs occasionally throughout the northern part of the study area. The main crops comprise Barley and Wheat, which at the time of survey were ready for harvest.

Evaluation:Botanically this habitat is of low ecological importance being intensively managed for agriculture. The habitat is used by Yellowhammer (listed on the red List of Birds of Conservation Concern in Ireland (BoCCI)).

Hedgerows (WL1)
Hedgerows form the main field boundaries throughout agricultural and arable land within the study area. Specific surveys were carried out on the most significant hedgerows and treelines where existing polesets are located. Almost all hedgerows surveyed are managed and well maintained.

Species that occur most commonly throughout the hedgerows include Hawthorn (*Crataegus monogy*na), Hazel (*Corylus avellana*), Willow (*Salix* sp.), Elder (*Sambucus nigra*), Ash (*Fraxinus excelsior*), Common Gorse (*Ulex europaeus*) and Blackthorn (*Prunus spinosa*) which typically attain heights of 2-5 metres. Larger more mature trees are also common with ash being the most abundant, with Oak (*Quercus* spp.) and Alder (*Alnus glutinosa*) also recorded. However, these mature trees are all removed from the line route and lie outside of falling distances.

The understorey typically includes species such as Wild Rose (*Rosa* spp.), Bramble (*Rubus fruticosus*) and Ivy (*Hedera helix*). The more robust examples have a higher diversity of woodland flora including Cleavers (*Galium aparine*), Tufted Vetch (*Vicia cracca*), Honeysuckle (*Lonicera periclymenum*), Herb Robert (*Geranium robertianum*), Hogweed (*Heracleum sphondylium*), Common Chickweed (*Stellaria media*), Bracken (*Pteridium aquilinum*) and Meadowsweet (*Filipendula ulmaria*). Many of the better quality hedgerows were located in lower-lying agricultural farmland adjacent to drainage ditches and river crossings.

Most hedgerows occurring along the existing line ranged from 1-2 m in height and were narrow (see Plate 8.11), with poor base structures although examples of more robust hedgerows were also recorded. Following an analysis of hedgerows along the line, 91 hedgerows have been identified that are traversed by the existing line. These hedgerows have been managed in the past to ensure adequate clearance beneath the line and therefore will not be impacted by the proposed development. A further 48 hedgerows overlap with the 'indicative works area' of structures associated with the line route.

Evaluation:Hedgerows serve as important corridors for wildlife linking areas of semi-natural habitat within an agricultural landscape. Good examples of hedgerow habitat form well developed intact structures serving to provide suitable habitat for terrestrial mammals, bats and birds.

Wet grassland (GS4)
Wet grassland occurs at one location along the existing line (at Kyleroe, structures BK73-75) (see Plate 8.13). Species recorded include Soft Rush (*Juncus effusus*), Yorkshire Fog (*Holcus lanatus*), Marsh Thistle

(*Cirsium palustre*), Creeping Buttercup (*Ranunculus repens*) and Common Spotted Orchid (*Dactylorhiza fuchsii*).

Evaluation:The habitat is generally considered to be of local importance (high value). The habitat provides a refuge to wetland flora and fauna within an intensively managed agricultural landscape.

Treelines (WL2)

The existing line route crosses a number of treelines. The habitat typically comprise lines of mature native trees which include Ash (*Fraxinus excelsior*), Alder (*Alnus glutinosa*), Oak (*Quercus* spp.), Willow (*Salix* spp.) and Elder (*Sambucus nigra*). No large mature trees occur within falling distances of the existing line route. A good example of this habitat occurs at Cellarstown.

Evaluation:Treelines may provide valuable roost and foraging areas for bats.

Depositing / Lowland Rivers (FW2)

The line route crosses a number of natural watercourses. The most notable crossing is at Mohil where the Line crosses the River Dinin (see Plate 8.14). The river is designated as a cSAC for the protection of a range of habitats and species listed on Annex I and II of the EU Habitats Directive. The river is c. 20 metres wide at this location and is likely to provide suitable habitat for Atlantic Salmon and Otter, both of which are Annex II listed species.

The line also crosses lowland rivers at Rathduff, Mohil (Dinin River), Brownstown (Pococke River) and Scart.

Evaluation: The line crosses the River Barrow and River Nore cSAC at a single location, where two existing poleset structures are located adjacent to the boundary of the cSAC. The river is recognised as being of international importance. The line route also crosses tributaries that feed into the River Barrow and Nore cSAC further downstream.

Scrub (WS1)

Scrub is uncommon throughout the existing line route. Scrub recorded included dense stands of Common Gorse (*Ulex europaeus*) and Hawthorn (*Crataegus monogyna*).

Scrub habitat recorded within the study area was dominated by Common Gorse on rock outcrop. Other species recorded include Elder (*Sambucus nigra*), Honeysuckle (*Lonicera periclymenum*), Bracken (*Pteridium aquilinum*), Bramble (*Rubus fruticosa*), and Nipplewort (*Lapsana communis*).

Scrub was recorded at Gragara (see Plate 8.15), Kilmademoge and Radestown South.

Evaluation:The habitat is generally considered to be of low ecological value from a botanical perspective. The habitat is common and widespread throughout most of the country. However, Scrub may provide valuable cover to terrestrial mammals and nest sites for common bird species.

Other Habitats

Drainage Ditches (FW4) are a common feature of the study area, often occurring alongside hedgerows. Stone walls (BL1) are present as field boundaries in some places along the line route. Dry meadows and grassy verges (GS2) are present along road sides and adjacent to hedgerows throughout much of the line. The line also traverses a number of roads that would be classified as Built land and artificial surfaces (BL3). Conifer Plantation (WD4) occurs just to the East of the line route at Connahy (Structure BK24) while Mixed Broadleaved Woodland (WD1) occurs just West of the line route at Jenkinstown (Structure 41).

Plant Species

Common plant species recorded during the field survey are detailed in the habitat descriptions above and listed in Appendix 8.4. During the field survey, habitats were also assessed as to their potential suitability for rare plants. The habitats present within the study area (based on their condition and the known distribution of rare species, see Table 8.20 below), are not considered likely to support any rare or protected plant species. No red data book plant species were recorded within the study area during field surveys.

Table 8.20 lists rare and protected plant species that have been recorded from the 10km squares that the proposed line route is situated within (S46, S47, S55, S56), as available from the National Parks and Wildlife Service.

10 km Square	Species	Date of last record
S46	Red Hemp Nettle (*Galeopsis angustifolia*)	1866
S46	Autumn Crocus (*Colchicum autumnale*)	1866
S55	Small White Orchid (*Pseudorchis albida*)	
S55	Autumn Crocus (*Colchicum autumnale*)	1885 & 1886

Table 8.20 Rare and protected plant records for 10 km squares of the study area (S46; S47; S55; S56)
[Source: National Parks and Wildlife Service, Rare Plant Database]

Evaluation:No red data book plant species were recorded within the study area during the course of the field survey. Taking into consideration the quality and type of habitats recorded it is deemed unlikely that any rare or threatened plant species occur in close proximity to the line route and proposed structure locations.

8.3.6.3 Fauna

Birds

Breeding birds

The majority of birds recorded throughout the existing Ballyragget to Kilkenny 110kV line route were recorded amongst hedgerows. Most of these birds are common and widespread in the area and typical of the habitats recorded along the line route. Species recorded included: Wren, Songthrush, Meadow Pipit, Linnet, Yellowhammer, Chaffinch, Wood Pigeon, Rook, Jackdaw, Redpoll and Blackbird.

A number of summer migrants including Blackcap, Willow Warbler, Swallow, Chiffchaff and Whitethroat were also recorded throughout the area.

Linnet, an amber listed bird species is listed as a Species of European Conservation Concern (SPEC) due to their unfavourable conservation status in Europe (Lynas *et al.* 2007). Swallow is amber listed due to the species un-favourable conservation status.

Yellowhammer, a red listed bird species of conservation concern in Ireland (BoCCI), was recorded throughout the line route in close proximity to arable crops (e.g. barley and wheat). The species is red listed due to a decline in the breeding population over the past 25 years (Lynas *et al.* 2007).

Kingfisher (listed on Annex I of EU Birds Directive), is likely to occur along the watercourses in proximity to the line route.

Evaluation: Two bird species of conservation concern have been confirmed in proximity to the proposed line route during the breeding season. Yellowhammer is relatively common and widespread in this part of Ireland, occurring throughout farmed lowland areas. The kingfisher is restricted to river corridors within the study area. It is concluded that the proposed line route is not of particular importance to bird species of conservation concern and that the species recorded are mostly common and widespread and typical of the habitats recorded.

Wintering birds

The main concentrations of winter birds in the surrounding area are known to occur along the corridor of the River Nore. The main sites along the River Nore include Threecastles Bridge and Newpark Marsh, both of which are located ca. 3km west of the line route (Crowe *et al.* 2005). There is no evidence to suggest that areas in proximity to the line route are of high importance to wintering birds.

The main watercourses and their associated floodplains, such as the River Dinin, may be of value to water birds during winter.

Evaluation:The line route is removed from any sites of known importance to wintering waders and wildfowl. The proposed line works involves up-rating of an existing line and therefore no additional collision risk is expected. The part of the line where earth wires are to be added (the first 1.73 km from the Ballyragget substation) does not occur in proximity to any waterbird site or known flight paths.

Mammals (including Bats)
Mammal species that have been reported from the 10 km squares of the study area are listed in Table 8.21 below.

Rabbits were regularly recorded throughout the study area. Other evidence of mammals recorded during the field survey include Fox droppings and a single Badger sett entrance.

The badger sett entrance was located along a hedgerow c. 10 m west of an existing structure in the townland of Gragara. A recent visit to the site (June 2013) suggests that this sett entrance is not currently used as indicated by dense growth of vegetation. Badger are likely to occur throughout the study area although only a single sett entrance was located in proximity to the line route despite searches being undertaken throughout potentially suitable habitat.

Similarly, it is likely that Otters occur along some of the watercourses of the study area although no evidence was recorded along watercourse sections in proximity to the existing line route.

Bats are likely to commonly occur throughout the study area and would be expected to be foraging and commuting amongst suitable habitat such as woodlands, watercourses, hedgerows and treelines. Large mature trees may provide suitable roost sites. The proposed up-rating of the line will not necessitate the removal of any buildings or mature trees, which could provide suitable bat roosts.

Species	Protected Status
Hedgehog	Wildlife Acts
Pygmy Shrew	Wildlife Acts
Rabbit	None
Mountain (Irish) Hare	Habitats Directive Annex V; Wildlife Acts
Red Squirrel	Wildlife Acts
Brown Rat	None
Red Fox	None
Irish Stoat	Wildlife Acts
American Mink	None
Badger	Wildlife Acts
Otter	Habitats Directive Annex II & IV; Wildlife Acts
Pine Marten	Habitats Directive Annex V; Wildlife Acts
Grey Squirrel	None
American Mink	None
Daubentons Bat	Habitats Directive Annex IV; Wildlife Acts
Brown Long-eared Bat	Habitats Directive Annex IV; Wildlife Acts
Common Pipistrelle	Habitats Directive Annex IV; Wildlife Acts
Leisler's Bat	Habitats Directive Annex IV; Wildlife Acts
Soprano Pipistrelle	Habitats Directive Annex IV; Wildlife Acts
Natterer's bat	Habitats Directive Annex IV; Wildlife Acts

Table 8.21 Terrestrial mammals present within the 10 km squares of the study area (S46; S47; S55; S56)
[Source: National Biodiversity Data Centre (2012)]

Evaluation: Many mammal species are strictly protected under national and international legislation. Protected species that are likely to occur in proximity to the line include Badger and Otter. The more valuable habitats that occur within the study area include Scrub, Woodland and Watercourses.

Bats are likely to commonly occur throughout the study area and would be expected to be foraging and commuting amongst suitable habitat such as woodlands, watercourses, hedgerows and treelines. Large

mature trees may provide suitable roost sites. The proposed line route will not necessitate the removal of any built structures, which often provide suitable bat roosts.

Other terrestrial fauna
Common butterfly species were recorded during field surveys including, Green-veined White (*Pieris napi*), Meadow Brown (*Maniola jurtina*) and Ringlet (*Aphantopus hyperantus*).

Evaluation:Considering the habitats present, it is concluded that the areas in close proximity to the existing line are unlikely to be of particular value to any other terrestrial species of conservation concern.

8.3.6.4 Fisheries and aquatic fauna

The existing Ballyragget to Kilkenny 110kV line occurs within the River Nore catchment. The Nore flows roughly parallel to the line route, approximately 3km to the west.

The main rivers and tributaries of the Nore are part of the River Barrow and River Nore cSAC, as designated under the EU Habitats Directive.

The River Nore rises in the eastern slopes of the Devil's Bit mountain in the townland of Borrisnoe, North Tipperary and flows south-eastwards through Laois and Kilkenny before merging with the River Barrow North of New Ross.

Most of the tributaries of the River Nore including the Dinin are important nursery waters for salmonid species (Annex II, EU Habitats Directive). The Annex II species, Freshwater Crayfish and both River and Brook Lamprey also occur throughout many of the watercourses in the study area (NPWS 2011).

The existing line traverses a number of minor rivers and streams in the Nore catchment that are likely to serve as nursery grounds for Atlantic Salmon, Lamprey (River and Brook) and Freshwater Crayfish.

Evaluation:The line is located within the catchments of the River Nore, which is of high ecological interest and deemed to be of international importance. The line traverses a number of rivers and streams in the Nore catchment that are likely to serve as nursery grounds for Atlantic Salmon, Lamprey (River and Brook) and Freshwater Crayfish.

8.3.6.5 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.22 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater.

Site	Location	Evaluation	Brief description
River Nore and River Barrow cSAC at Gragara and Mohil	Line traverses cSAC at Gragara and Mohil Structure BK048 – BK049	International importance	At Mohil, the Dinin River and adjacent Ash and Alder woodland habitat are designated within the River Barrow and River Nore cSAC. The woodland occurs on a steep north-facing slope. See Plate 8.14. At Gragara, a small area of species poor Hawthorn dominated scrub on an embankment is designated within the cSAC. See Plate 8.15.
Wet Grassland at Brownstown	Structure BK73 - BK75	Local importance, higher value	Wet grassland area that is relatively species rich and represents one of the few areas of biodiversity value along the entire Ballyragget – Kilkenny line. See Plate 8.10.

Table 8.22 Key Ecological Receptors identified within close proximity to the proposed development

8.3.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

8.3.7.1 Designated Sites

The location of designated sites in relation to the Kilkenny 110kV substation site is presented in Figure 8.3. The substation is not located within or adjacent to any site designated for nature conservation. The nearest designated site to the substation is River Barrow and Nore cSAC, located c. 2.9 km to the west. Further details of those sites in the surroundings are presented in Table 8.19 above.

Evaluation:The closest designated site to the Kilkenny substation is the River Barrow and River Nore cSAC located approximately 2km to the west. The cSAC is of international importance.

8.3.7.2 Habitats and vegetation

Buildings and artificial surfaces (BL3)

The proposed bay is located within an area of hard-standing at Kilkenny substation (see Plate 8.16). The substation comprises control buildings, together with an array of steel structures associated with the site functioning as an operating electrical substation.

Evaluation:The habitat is of no ecological interest.

Dry Meadows and grassy verges (GS2)

A narrow fringe of dry grassland occurs surrounding the hardcore area within the substation site. Species recorded included: False Oat-grass (*Arrhenatherum elatus*), Yorkshire Fog (*Holcus lanatus*), Black Sedge (*Carex nigra*), Silverweed (*Potentilla anserina*), Red Clover (*Trifolium pratense*), White Clover (*Trifolium repens*) and Meadow Buttercup (*Ranunculus acris*).

Evaluation:The habitat is small in extent and of low ecological interest.

Plant Species

Common plant species recorded during the field survey are detailed in the habitat descriptions above and listed in Appendix 8.4. No red data book plant species were recorded within the study area during the field survey. Furthermore, the habitats present within the study area are not considered likely to support any rare or protected plant species. Those rare and protected plant species previously recorded within the 10 km square (S55) of the study area are presented in Table 8.20 above.

8.3.7.3 Fauna

Birds

Few bird species were recorded during the site visit. Robin, Chaffinch and Great-tit were recorded from a hedgerow in proximity to the site. Considering the habitats present within the site it is concluded that the area is of little value to bird species.

Evaluation: The substation site is considered to be of low value to birds.

Mammals (including Bats)

No mammal species were recorded during the site visit. Considering the habitats present within the site it is concluded that the area is of no value to mammals species of conservation concern. Those species that occur within the 10 km square (S55) of the substation are presented in Table 8.21 above.

Evaluation: The substation site is considered to be of low value to mammals.

Other fauna

Butterfly species recorded from the area of dry grassland included Meadow Brown and Green-veined White (*Pieris napi*). Considering the habitats present within the site it is concluded that the area is most unlikely to be of value to other terrestrial species of conservation concern.

Evaluation: The substation site is of low value to other terrestrial fauna species.

Fisheries and aquatic fauna
The substation site is located within the River Nore catchment (see Section 8.3.5.4 above for description of the catchment). There are no drainage ditches or natural watercourses within or adjacent to the substation site. The nearest watercourse to the substation site occurs c. 120 metres to the North and is a tributary of the River Nore.

Evaluation: The substation site occurs within the catchment of the River Nore, a river of high ecological interest. However, there are no natural watercourses or drainage features within or immediately surrounding the substation site.

8.3.7.4 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, there are no 'Key Ecological Receptors' identified in close proximity to the substation site at Scart, County Kilkenny.

8.3.8 UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

8.3.8.1 Designated Sites

The location of designated sites in relation to the existing Athy Portlaoise 110kV line is presented in Figure 8.1 above. Summary details of those sites that occur within 5 km of the line route are presented in Table 8.7 above.

The closest designated area to the existing line is Timahoe Eskers proposed Natural Heritage Area (pNHA) and National Nature Reserve (NR), located c. 60m to the West (at its nearest point).

The nearest cSAC to the line is the Ballyprior Grasslands cSAC located c. 3.5km to the East (at its nearest point), while the River Barrow and River Nore cSAC is located c. 4.2km downstream to the East.

The nearest designated SPA to the line is The River Nore SPA (Site Code: 4233) located approximately 13.5km South-west at its nearest point.

Evaluation:The closest designated site to the existing line is Timahoe Esker pNHA / NR, located 60m to the West (at its nearest point).

8.3.8.2 Habitats and vegetation

Improved agricultural grassland (GA1)
This is the main habitat that occurs throughout the line (see Plate 8.1). The grassland is species poor and in many cases has been recently reseeded.

Evaluation:This habitat is of low ecological importance being intensively managed for agriculture.

Arable crops (BC1)
This habitat is agricultural land that is cultivated and managed for the production of arable crops and is common along the existing Athy to Portlaoise line route (see Plate 8.3). The habitat usually comprises a monoculture of a single cereal crop such as Wheat or Barley with few other species present.

Evaluation:This habitat is of low ecological importance being intensively managed for agriculture. The habitat is used by Yellowhammer.

Hedgerows (WL1)
Field boundaries of the study area comprise Hedgerows. The most common species that occur include Hawthorn (*Crataegus monogyna*), Ash (*Fraxinus excelsior*) and Elder (*Sambucus nigra*). Species present in the shrub layer include Rose (*Rosa* spp.), Bramble (*Rubus fruticosus* agg.), Ivy (*Hedera helix*) and Honeysuckle (*Lonicera periclymenum*). Herbaceous species that occur in the field layer include Common

Nettle (*Urtica dioica*), Cleavers (*Galium aparine*) and Cock's-foot (*Dactylis glomerata*). Three structures are currently located within or adjacent to hedgerows.

Following an analysis of hedgerows along the line, 22 hedgerows have been identified that are traversed by the existing line. These hedgerows have been managed in the past to ensure adequate clearance beneath the line. A further five hedgerows overlap with the 'indicative works area' of structures associated with the line route.

Evaluation:The hedgerows that occur in the area provide ecological connectivity between areas of semi-natural habitat and are a refuge to flora and fauna within an intensively managed landscape. They are deemed to be of local ecological importance (lower value).

Lowland depositing river (FW2)
There are two watercourses along the route of the existing line, the Timahoe River which flows between structures AP94 and AP95 and a small watercourse (tributary of the Timahoe River) along the northern boundary of the Coolnabacky substation site (see Section 8.3.1.2), just North of Structure AP99.

The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River (designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the line route.

Evaluation:The watercourses are regarded as being of local importance (high value), as they are likely to provide suitable Salmonid nursery habitat and suitable habitat for Freshwater Crayfish and Lamprey, both Annex II species. Both watercourses are hydrologically connected to the River Barrow and Nore cSAC.

Drainage ditches (FW4)
A network of drainage ditches occur along field boundaries throughout the study area. These drainage ditches eventually discharge to the Timahoe River to the south-east which in turn is a tributary stream of the River Barrow and Nore cSAC.

Evaluation:The drainage ditches that occur in the area are of local ecological importance (lower value).

Recolonising bare ground (ED3)
An example of this habitat occurs within an abandoned quarry at Coolnabacky (in proximity to Structure AP89). The quarry comprises waste ground colonisers and scrub species. Species recorded include Ox-eye Daisy (*Leucanthemum vulgare*), Rough Hawkbit (*Leontodon hispidus*), Common Spotted Orchid (*Dactylorhiza fuchsii*), Common Poppy (*Papaver rhoeas*), Rosebay Willowherb (*Epilobium angustifolium*), Hogweed (*Heracleum sphondylium*), Ragwort (*Senecio jacobaea*), Common Nettle (*Urtica dioica*), Speedwell (*Veronica* spp.), Greater Birds-foot Trefoil (*Lotus corniculatus*) and Tufted Vetch (*Vicia cracca*). Willow spp. (*Salix* spp.), Ash (*Fraxinus excelsior*), Sycamore (*Acer pseudoplatanus*) and Common Gorse (*Ulex europaeus*) were recorded growing on stock piles of material and along the outer margins of the quarry.

Evaluation: In general the habitat is deemed to be of low value for biodiversity. However areas of abandoned quarries are known to support populations of plant species that are uncommon in the wider countryside. This habitat is therefore deemed to be of local importance (low value).

Plant species
No rare or protected plant species were recorded during the field surveys. The NPWS rare plant database lists only a single rare plant species, Small-white Orchid (*Pseudorchis albida*), as having been recorded from the 10 km square (S59) of the line. The plant has not been recorded in recent times and is normally associated with unimproved grassland and heath habitat particularly in upland areas (Curtis and Thompson 2009).

It is concluded that those habitats present on site are unlikely to support rare or protected plant species.

Evaluation: No rare of protected plant species were recorded during the site visit. Based on the habitats present, it is concluded that no rare or protected plant species are likely to occur in the vicinity of the proposed line route.

8.3.8.3 Fauna

Birds

The bird fauna associated with the northern part of the line route is described in Section 8.3.1.3 above. Based on the presence of similar habitats along the length of the line route, it is likely that the avifaunal community is similar throughout. The Timahoe River may provide suitable habitat for Kingfisher, a species listed on Annex I of the EU Habitats Directive.

A detailed survey of wintering birds of the wider study area has been undertaken to inform the ecological impacts assessment. The results of this survey are presented in Appendix 8.1. The line route is not located within an area utilised by significant flocks of water birds during winter months.

The nearest site of interest to water birds that has been reported is River Barrow (Cloney), located c. 13 km North-east of the proposed substation site. This site forms part of the Upper Barrow Flood-plain IBA (Important Bird Area), as listed by BirdWatch Ireland (Hunt *et al.* 2000). Surveys undertaken during the 2010 and 2011 winter season recorded few birds from the area with a peak count of 15 Whooper Swans, 42 Golden Plover and 20 Lapwing (see Appendix 8.1).

Evaluation:The hedgerows are of local value to widespread and common bird species. Yellowhammer is the only species of conservation concern recorded from the area. Kingfisher (Annex I species) may occur along sections of the Timahoe River. It is unlikely any other bird species of high conservation concern regularly use the area.

Mammals (including Bats)

Rabbits and Hares were recorded during the field surveys undertaken. Those mammals that have been reported from the 10 km square (S 59) of the line route are listed in Table 8.5 above. These species are likely to occur in suitable habitat in the surroundings.

Bats are likely to utilise the hedgerows in proximity to the line route for foraging and commuting. No potential bat roosts (built structures / large mature trees) were identified along the route.

All of the new proposed structure locations are within intensively managed agricultural lands that are of low value to terrestrial mammals. Three existing structures due for replacement occur in close proximity to hedgerows, which may be used by bats for foraging or commuting.

Evaluation:A low level of mammal activity was recorded during field surveys. The improved grasslands and tillage fields that occur throughout the line are of low value to mammal species of conservation concern. Hedgerows within the study area may provide suitable foraging and commuting habitat to protected bat species and may provide cover to other terrestrial mammals. Watercourses in the vicinity of the line route are likely to be utilised by Otter.

Other terrestrial fauna

Other species recorded in proximity to the line route include Meadow Brown (*Maniola jurtina*) butterfly, Ringlet (*Aphantopus hyperantus*) butterfly and the Beautiful Demoiselle (*Calopteryx virgo*) damselfly.

Common Frog (*Rana temporia*) were recorded from a drainage feature nearby the line route and are likely to occur along other drainage ditches in the vicinity.

Evaluation:Considering the habitats present, it is concluded that the site is unlikely to be of particular value to any other terrestrial fauna species of conservation concern.

8.3.8.4 Fisheries and aquatic species

The line route is located within the River Barrow Catchment. The line crosses two watercourses as mentioned in Section 8.3.8.2 above, including the Timahoe River and a tributary stream of this river.

The Timahoe River is a tributary of the Bauteogue River which in turn feeds into the Stradbally River (designated as part of the River Barrow and Nore cSAC) c. 4.5 km downstream from the line route. The Timahoe River provides important nursery waters for salmonid species such as Atlantic Salmon (Annex II species) and Brown Trout (*Salmo trutta*).

Lamprey and Freshwater Cray Fish (both listed on Annex II of the EU Habitats Directive) are likely to occur in the watercourses in proximity and downstream of the proposed line route. There are no recent records of Freshwater Pearl Mussel from the Barrow catchment (North – South 2 Project 2010).

Evaluation:The site lies within the River Barrow catchment, the main watercourses of which are designated within the River Barrow and Nore cSAC. The watercourses which the line traverses are hydrologically connected to this site of international ecological importance.

8.3.8.5 Key Ecological Receptors

Following a review of baseline ecological data collected during the desktop review coupled with field surveys, 'Key Ecological Receptors' in close proximity to the proposed development were identified. Table 8.23 presents a summary of those areas that are deemed to be of 'high local' ecological importance or greater.

Site	Location	Evaluation	Brief description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Local importance, higher value	Natural spring-fed watercourse that feeds into the River Barrow and River Nore cSAC c. 4.2km downstream. See Plate 8.2.
Timahoe Eskers pNHA / NR	70 m South-west	National importance.	Esker ridges with broadleaved woodland. Calcareous springs also occur.

Table 8.23 Key Ecological Receptors identified within close proximity to the proposed development

8.4 POTENTIAL IMPACT

8.4.1 DO NOTHING IMPACT

In the case of no development occurring, there would continue to be changes in biodiversity or ecological value as a result of on-going land management within the study area. It is most likely that most of the area would continue to be managed intensively for agriculture. Possible changes in management could include further land drainage, scrub clearance and afforestation - all of which would have a localised negative impact on ecological value / biodiversity of the area, however, it is not expected that these changes in land-use would be influenced by whether the proposed development proceeds or not.

8.4.2 POTENTIAL IMPACT FROM PROJECT

The potential ecological impacts of the proposed development are discussed in a general context in Section 8.4.3 below while the predicted impacts (prior to mitigation being considered) associated with each Unit of the proposed development are described in detail in Section 8.4.4. Residual impacts are described under Section 8.6.

8.4.3 INTRODUCTION TO POTENTIAL IMPACTS

Direct ecological impacts are those that result in physical loss or degradation of a habitat and / or species. Indirect or secondary impacts are those, which contribute to the long-term decline in the quality of the habitat and / or species.

8.4.3.1 Direct Habitat Loss

The proposed development occurs on habitats as described above. The footprint of the development will cause a direct loss of habitat where the substations and angle mast foundations are to be placed.

In the case of substations, the habitat loss will be permanent. Based on the design of the angle masts habitat loss is likely to be minimal at these locations and following the construction phase habitat re-instatement and natural regeneration will result in only short term habitat loss. In the case of forested areas, long term habitat loss will occur as maintenance and safety requirements will necessitate felling of trees in these areas.

Areas outside of the footprint of the development may suffer temporary or short term habitat loss due to construction related activities in the vicinity of structure locations. The loss of habitat as a result of the proposed development may impact on bird and mammals that utilise the affected habitat.

8.4.3.2 Secondary Impacts

The various phases associated with the development may have a number of types of secondary ecological impacts. If these impacts significantly alter the type and/or quality of the habitat, then such changes are effectively additional habitat losses. In the case of the proposed development (taking into consideration the characteristics of the proposed development), secondary/indirect impacts could include:

- hydrological impacts
- pollution of watercourses
- changes in habitat management
- disturbance and collision (mammals and birds)

These types of impacts are discussed below. Potential secondary impacts to watercourses are addressed in the Section 10 Water (Hydrology and Hydrogeology).

Hydrological Impacts

Hydrological impacts to habitats could result from changes to patterns of surface water and/or ground water drainage. While it may be relatively straightforward to prevent changes to surface water drainage patterns, changes to ground water hydrology may be much more difficult to predict at a scale relevant to potential ecological impacts. Habitats such as springs, fens, marshes and lakes are potentially susceptible to hydrological impacts, and even quite subtle and localised hydrological changes may have significant habitat impacts.

However, there are few permanent drainage works associated with the proposed development (except in the case of the new substation sites), therefore any hydrological impacts would be expected to be temporary in nature.

Furthermore, there are no sensitive wetland habitats (see habitat maps, Appendix 8.3) within the likely zone of impact that would be sensitive to such impacts. The potential for hydrological impacts on watercourses downstream of the Coolnabacky and Ballyragget substations exists and these are addressed in the Natura Impact Statement presented in Appendix 8.2.

Pollution of Watercourses

The pollution of watercourses is examined in detail in Section 10 Water (Hydrology and Hydrogeology). Potential impacts to the aquatic ecology of the River Barrow and River Nore cSAC are addressed in the Natura Impact Statement which accompanies this EIS (see Appendix 8.2). The potential for impacts on watercourses and aquatic species is largely restricted to the construction phase of the project. Freshwater Pearl-mussels are especially sensitive to any deterioration in water quality caused by pollution, sediment run-off or enrichment. Other aquatic species of conservation concern (such as Atlantic Salmon, Freshwater Crayfish) would also be sensitive to deterioration in water quality.

Changes in Habitat Management
During the development the following changes to land management are likely to occur due to the proposed development:

- initial felling of woodland areas and forested sites along the preferred line route
- a reduction of grazing in the immediate vicinity of angle masts;
- and occasional trimming of treelines, hedgerows and wooded areas to retain adequate clearance beneath lines during the operation phase of the development.

Changes in the present management may cause negative or positive impacts on the ecological value of the habitats within the study area.

The above changes are only relevant to the 'new' sections of overhead line being proposed as land management will not change on those lines due to be uprated or modified (Ballyragget to Kilkenny and Athy to Portlaoise).

Disturbance and Collision (Birds and Mammals)
Disturbance during the construction phase from noise, human activity, increased traffic, and artificial light may temporarily impact on bird (could reduce breeding success or disturb ground nesting birds) and mammal populations. There is very limited potential for disturbance to occur during the operation phase of the development.

Electrocution has been highlighted in the literature as a potential issue for large raptors. The line design has removed this possible issue as raptor species in the study area are too small to span the distance between phase to phase or conductor to conductor.

Overhead lines may result in possible collisions with individual birds. However, through species specific avoidance behaviour birds are generally able to avoid collisions with overhead lines. It is accepted that species most susceptible to collision are those that lack agile flight and have 'high wing loading'. Whooper Swans are a species of conservation concern that would be susceptible to such collision. A winter survey of Whooper Swans (and other wintering birds) throughout the surrounding study area was undertaken over two winter seasons to inform the route selection and impact assessment. These surveys showed that low numbers of winter birds were recorded throughout the study area and it is concluded that the proposed development does not pose any additional threat to the Bird Species that would be susceptible to collision.

8.4.4 PREDICTED IMPACTS

As mentioned previously a full explanation of the methods and terminology used in assessing the impacts of the proposed development is presented in Section 8.2 above. The impacts described in this section are those ecological impacts foreseen due to the proposed development prior to the consideration of appropriate mitigation. Residual impacts are described in Section 8.6.

8.4.4.1 Unit 1 - New 400/110kV GIS substation at Coolnabacky townland, Co. Laois

Construction phase
Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development

- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

Impacts upon habitats of ecological value have been avoided by constraint identification and avoidance. The area of improved grassland present at the site will be lost due to the construction of the substation. It is estimated that c. 1.3 ha of improved grassland will be lost due to the construction of the substation.

The impact of direct habitat loss resulting from the proposed substation is deemed to be an imperceptible negative impact; based mainly on the low ecological value of the affected habitat. The duration of the impact will be permanent.

Secondary Habitat Impacts

The construction will require temporary drainage at the substation site to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to the substation site means that this possible secondary impact will be neutral.

There may be a requirement for temporary drawdown of the ground water table at the proposed development site. The effect of this drawdown could potentially impact on the flow regime of sensitive groundwater fed watercourses that surround the proposed development site, and subsequently on the sensitive watercourses downstream.

However, deep excavations below the water table encountered in the Site Investigation will be kept to a minimum in the foundation design. It is not envisaged that there will be extensive deep excavations requiring dewatering for any extended period of time to cause a material difference in the local groundwater table level. It is envisaged that there will, therefore be no impact on the spring fed watercourses in the area.

No impacts are foreseen on the Timahoe Eskers pNHA / NR, located c. 0.4 km to the south-east of the proposed substation site. The main habitat of interest within the pNHA / NR is deciduous woodland that would not be sensitive to any secondary impacts due to the construction of the substation. Calcareous springs are also reported from the site, as mentioned above, the proposed development of the substation is not expected to impact on the local water table and therefore no impacts on the hydrology of the pNHA / NR and associated springs are foreseen.

The impacts on freshwater habitats during the construction phase include possible deterioration of water quality due to siltation and potential spillages. Further details on the potential impacts on water quality are addressed in Section 10.

The main sensitive ecological receptor in proximity to the substation site constitutes a spring fed watercourse which occurs along the north-western boundary of the site. This watercourse provides suitable habitat to Annex II species and feeds into the cSAC c. 4.5 km downstream to the north-east. Drainage ditches that occur along both the western and north-eastern boundary of the substation site also feed into this watercourse.

Works that are to be undertaken during the construction of the substation that could give rise to impacts on the watercourse and the downstream cSAC include:

- The excavation and subsequent management of top-soil and subsoil. It is estimated that approximately 8000m^3 of material will be excavated during the construction phase of the project. Following excavation, it is proposed to store the material in berms at pre-determined locations within the site. Should significant quantities of excavated material become entrained by rain water and transported to surrounding watercourses then this could impact on the habitat of Annex II species downstream of the substation site.

- The use of concrete and fuels during the construction phase of the project. Should any of this concrete or other harmful substances enter the surrounding watercourses then it could potentially impact on habitat of Annex II species downstream.

It is considered that the impacts above are unlikely to occur based on best practice construction methods being adopted. However, additional mitigation measures specific to the substation site are presented below to further reduce the likelihood of these impacts occurring.

Birds and Mammals
The loss of habitat may cause the loss of potential foraging and breeding sites for birds and mammals. Based on the area and type of habitat (improved grassland) that will suffer habitat loss, this impact is deemed to be an imperceptible negative impact.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. The mammal and bird fauna at the substation site are not overly sensitive to disturbance. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal. Mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be an imperceptible negative impact.

Operation Phase
Direct Habitat Impacts
No direct habitat impacts are foreseen throughout the operation phase of the development.

Secondary Habitat Impacts
Potential impacts on the surrounding watercourses are addressed in Section 10 Water (Hydrology and Hydrogeology).

Potential impacts on freshwater habitats during the operation phase may arise from deterioration of water quality due to accidental spillages or runoff from hard-core areas of the site. Further details on the potential impacts on water quality` during the operation phase are addressed in Section 10.

No additional secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals
The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the substation site and its immediate surroundings.

Impacts on Ecological Receptors
A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.24.

Site	Location	Ecological feature	Nature of impact	Impact description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to surface water run-off during construction and operation.	Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.
Timahoe Eskers pNHA / NR	0.4 km to South-east	Esker ridges with broadleaved woodland. Calcareous springs also occur	None foreseen	NA

Table 8.24 Predicted impacts on Key Ecological Receptors

8.4.4.2 Unit 2 - New connection to Coolnabacky from the existing Moneypoint-Dunstown 400kV line

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development area, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance and access to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

Impacts upon the habitats of ecological value have been avoided by constraint identification and avoidance. Small areas of improved grassland and arable lands will suffer temporary habitat loss due to the construction of masts. All hedgerows and other habitats of ecological interest have been avoided by placing structures in areas of low ecological value.

Table 8.25 shows the number of new structures located on different habitat types that are likely to be affected by short term habitat loss and disturbance.

Habitat	Number of structures
Improved agricultural grassland (GA1)	5
Arable Crops (BC1)	2
Total	**7**

Table 8.25 Summary table showing the habitat present at each structure location that are likely to be affected by short term habitat disturbance due to construction activities

The impact of direct habitat loss resulting from the proposed connection is deemed to be an imperceptible negative impact; based mainly on the low ecological value of the affected habitats. The duration of the impact will be temporary as the habitat surrounding the structure bases will be re-instated following construction and vegetation will recolonize in a relatively short timeframe.

There may be a requirement for some minor trimming of vegetation at hedgerows that occur between structures to provide adequate clearance beneath the overhead lines. This is only foreseen to be undertaken where hedgerows exceed 3 metres in height and therefore will be confined to those three Type II hedgerows that have been identified as occurring in the study area. This is deemed to be an imperceptible negative impact as it will only affect a small number of individual trees at each location. The structure of the hedgerow will largely be retained and therefore the value of the habitat as a wildlife corridor will be maintained.

Secondary Habitat Impacts

The construction will require temporary drainage at the mast sites to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to mast sites means that this potential secondary impact will be a neutral.

The impacts on surrounding freshwater habitats during the construction phase include potential deterioration of water quality due to siltation and potential spillages. Further details on the potential impacts on water quality are addressed in Section 10. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

The loss of habitat may cause the loss of potential foraging and breeding sites for birds and mammals. Based on the area and type of habitat (improved grassland and arable lands) that will suffer habitat loss, this impact is deemed to be an imperceptible negative impact.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. The mammal and bird fauna along the line route are not overly sensitive to disturbance. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal. Mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be an imperceptible negative impact.

Trimming of trees along hedgerows between structures may cause disturbance to birds and mammals (including bats) that utilise the hedgerows in the study area. This possible impact is deemed to be a minor negative impact, that will be temporary and of short duration.

Operation Phase

Direct Habitat Impacts

There may be a requirement for some minor trimming of vegetation at hedgerows that occur between structures to provide adequate clearance beneath the overhead lines throughout the operational phase of the project. This may cause disturbance to birds and mammals that utilise the hedgerows. This possible impact is deemed to be an imperceptible negative impact, that will be temporary and of short duration. It is likely to recur at intervals of c. 5 years.

Secondary Habitat Impacts

No additional secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

Occasional trimming of hedgerows beneath lines may cause disturbance to birds and bat species that utilise the hedgerows. This possible impact is deemed to be a minor negative impact, that will be temporary and of short duration. It is likely to recur at intervals of c. 5 years.

The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the study area.

There will be an on-going risk of collision between birds and the overhead line throughout the operational phase of the development. It is difficult to quantify the magnitude and significance of this potential negative impact. Studies in the literature generally conclude that collisions are not a biologically significant source of mortality for thriving bird populations (APLIC 1994). Should collisions occur between the power line and susceptible birds of high conservation concern (e.g. Whooper Swans; or other water birds) then this impact may be significant. However, this impact is deemed most unlikely as the design of the route has avoided those areas of value to susceptible species. Surveys undertaken over two winter seasons have shown that the proposed line route does not occur in an area utilised by significant numbers of susceptible bird species. This unlikely impact is predicted to be an imperceptible negative impact.

Impacts on Key Ecological Receptors

A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.26.

Site	Location	Ecological feature	Nature of impact	Impact description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible indirect impacts on water quality.	No direct impacts foreseen as line will span the site. Based on topography and dominant trees, there is likely to be no requirement for vegetation clearance at the site. Short-term deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.
Timahoe Eskers pNHA / NR	0.4 km to South-east	Esker ridges with broadleaved woodland. Calcareous springs also occur	None foreseen	NA

Table 8.26 Predicted impacts on Key Ecological Receptors

8.4.4.3 Unit 3 New connection to Coolnabacky from the existing Athy-Portlaoise 110kV line

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Impacts

The construction of an underground cable from the line cable interface masts to the substation will not cause any significant habitat loss. The affected habitat (improved grassland) will be re-instated immediately after construction works. The area of habitat affected is minimal and would not be expected to be of significant value to any bird or mammal species of conservation interest.

Secondary Habitat Impacts

The construction may require temporary drainage along the cable route. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to the cable route means that this potential secondary impact will be a neutral.

The impacts on surrounding freshwater habitats during the construction phase include potential deterioration of water quality due to siltation and potential spillages. Further details on the potential impacts on water quality are addressed in Section 10. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

The loss of habitat may cause the loss of potential foraging and breeding sites for birds and mammals. Based on the area and type of habitat (improved grassland) that will suffer habitat loss, this impact is deemed to be an imperceptible negative impact.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. The mammal and bird fauna at the substation site are not overly sensitive to disturbance. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal. Mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be an imperceptible negative impact.

Operation Phase

Direct Habitat Impacts

No direct habitat impacts are foreseen during the operation phase.

Secondary Habitat Impacts

No additional secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

No impacts on bird and mammal species are foreseen throughout the operation phase of the development.

Impacts on Key Ecological Receptors

A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.27.

Site	Location	Ecological feature	Nature of impact	Impact description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to run-off during construction.	Short-term deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.
Timahoe Eskers pNHA / NR	0.4 km to South-east	Esker ridges with broadleaved woodland. Calcareous springs also occur	None foreseen	NA

Table 8.27 Predicted impacts on Key Ecological Receptors

8.4.4.4 Unit 4 - A new 110kV / 38kV / MV substation in Ballyragget, Co. Kilkenny

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within the footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

Impacts upon the habitats of ecological value have been avoided by the constraint identification and avoidance. The area of dry meadow present at the site will be lost due to the construction of the substation. The total area of habitat loss due to the construction of the substation is estimated at c. 0.5 hectares.

The impact of direct habitat loss resulting from the proposed substation is deemed to be an imperceptible negative impact; based mainly on the low ecological value of the affected habitat. The duration of the impact will be permanent.

Secondary Habitat Impacts

The construction will require temporary drainage at the substation site to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to substation site means that this possible secondary impact will be a neutral.

The impacts on freshwater habitats during the construction phase include possible deterioration of water quality due to siltation and potential spillages. Further details on the potential impacts on water quality are addressed in Section 10.

The Ballyragget substation site is located approximately 300 metres east of the main channel of the River Nore. The main channel in this area supports a population of the Nore Freshwater Pearl-mussel which would be highly sensitive to any deterioration in water quality. There are no watercourses in close proximity to the proposed works area at the Ballyragget substation site that could provide a direct pathway to the main channel of the River Nore. Drainage at the substation site has been shown to go directly to ground water, which may in turn discharge to the main channel of the River Nore (see Section 10) providing a potential pathway for adverse impacts should contaminated water discharge from the proposed development site. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in more detail in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

The loss of habitat may cause the loss of potential foraging and breeding sites for birds and mammals. Based on the extent and type of habitat (dry meadow and roadside verge) that will suffer habitat loss, this impact is deemed to be an imperceptible negative impact.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. The mammal and bird fauna at the substation site are not overly sensitive to disturbance. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal. Mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be an imperceptible negative impact.

Operation Phase

Direct Habitat Impacts

No direct habitat impacts are foreseen throughout the operation phase of the development.

Secondary Habitat Impacts

Potential hydrological impacts on the nearby watercourses are addressed in Section 10.

Potential impacts on freshwater habitats during the operation phase may arise from deterioration of water quality due to accidental spillages or runoff from hard-core area of the site. Further details on the potential impacts on water quality during the operation phase are addressed in Section 10. Potential secondary impacts on water quality of the ecologically sensitive River Barrow and River Nore cSAC are addressed in further detail the Natura Impact Statement presented in Appendix 8.2.

No additional secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the substation site and its immediate surroundings.

Impacts on Key Ecological Receptors

A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.28.

Site	Location	Ecological feature	Nature of impact	Impact description
River Nore	300 m to West of Ballyragget substation	Main channel of the River Nore which is designated within the River Barrow and Nore cSAC.	Possible deterioration in water quality due to run-off during construction.	Short-term deterioration in water quality of surface / ground waters may impact on aquatic habitats and species of downstream watercourses.

Table 8.28 Predicted impacts on Key Ecological Receptors

8.4.4.5 Unit 5 - A new 110kV overhead line between Ballyragget and Coolnabacky

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance and access to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

Impacts upon the habitats of highest ecological value have been minimised by constraint identification and avoidance and subsequently careful consideration to mast and structure locations. While other factors influence the siting of structures, ecological constraints have been addressed to the extent that the layout avoids the most important and sensitive habitats in the wider study area. In addition, due to the nature of the development it is possible to span certain habitats of conservation interest and therefore avoid direct impacts.

Direct short term habitat loss will occur in those areas where angle masts are to be constructed. Stockpiling of material has the potential to cause additional short term habitat loss should it be placed in a manner that would smother vegetation.

Long term habitat loss is foreseen in those areas that the line route will traverse forested areas. Tree felling in these areas will be carried out within a 61 metre wide corridor. Based on a requirement of a non-wooded corridor of 61 metres, the total area of habitat currently classified as woodland that would be prone to long term habitat loss is estimated to be 15.1 hectares (2.5 km length of forestry requires felling), this is entirely made up of commercial conifer and mixed woodland plantations.

Short term habitat loss and disturbance is likely to occur within the works area at each structure location. Stockpiling of material within the site has the potential to cause additional short term habitat loss should it be placed in a manner that would smother vegetation. It can be seen from Table 8.29 that the vast majority of structures are to be constructed within habitats of low ecological value.

Habitat	Number of polesets	Number of angle masts
Improved agricultural grassland (GA1)	85	11
Scrub (WS1)	3	-
Hedgerows (WL1)	11	5
Wet grassland (GS4)	5	1
Arable Crops (BC1)	9	1
Conifer Woodland (WD4)	16	-
Immature woodland (WS2)	1	-
Treelines (WL2)	2	-
(Mixed) Broadleaved Woodland (WD1)	2	-
Total	**133**	**17**

Table 8.29 Summary table of the habitats present at each structure locations that are likely to be affected by short term habitat disturbance due to construction activities

There will be a requirement for some minor trimming of vegetation at hedgerows that occur between structures to provide adequate clearance beneath the overhead lines. This measure is only foreseen where hedgerows exceed 3 metres in height and therefore will be confined to Type II hedgerows and treelines that have been identified as occurring in the study area (see Table 8.30). In summary, it is foreseen that 47 Type II hedgerows and 31 treelines will be impacted by tree trimming operations. This is considered a worst case scenario as it is most probable that a proportion of these hedgerows and Treelines will not require trimming as the degree of trimming required depends on a number of factors including topography and the potential sag of the conductors at the hedge location.

Trimming of trees at intervening hedgerows and treelines is deemed to be a minor negative impact as it will only affect a small number of individual trees at each location. The structure of the hedgerows and treelines will largely be retained as the base and shrub layer will not be affected and therefore the value of the habitat as a wildlife corridor will be maintained.

	Occurring between structures	Impact
Hedgerows (Type I)	62	None
Hedgerows (Type II)	47	Tree trimming
Treelines	31	Tree trimming

Table 8.30 Number of intervening hedgerows and treelines that will be impacted by the proposed development.

In some instances habitat disturbance and temporary loss may occur at hedgerows that are located within the 'indicative works areas' although outside of the footprint of the structure. It is estimated that a total length of 705 metres of hedgerow will be directly impacted by this assuming a worst case scenario where 15 metres of hedgerow is impacted at each of these locations (see Table 8.31). This probable adverse impact constitutes a minor short term impact, as following the completion of construction hedgerows will be reinstated with planting of native species.

Some minor clearance of vegetation to facilitate site access may be required. However, in choosing suitable indicative site access routes potential adverse ecological impacts have been largely avoided by using existing farm tracks and gaps in hedgerows wherever possible. An assessment of these areas undertaken in June 2013 confirms that only minimal vegetation clearance is likely to be required.

Feature	Number overlapping with indicative works areas	Total length of hedgerow impacted (assuming impact zone of 15 m at each structure) (m)
Hedgerows (Type I)	33	495 m
Hedgerows (Type II)	10	150 m
Treelines	4	60 m
Total	**47**	**705 m**

Table 8.31 Number of hedgerows and treelines that overlap with 'indicative works areas'[22]

The impact of direct habitat loss resulting from the proposed overhead line is deemed to be a minor negative impact; based mainly on the ecological value of the habitats and the restricted area of habitat involved. Much of the habitat loss will be short term in nature (following reinstatement) and will be a one off impact as it will not recur during the operation phase of the development.

Secondary Habitat Impacts

The construction will require temporary drainage at angle mast sites to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to angle mast locations means that this secondary impact will be a neutral impact.

Possible impacts on freshwater habitats during the construction phase include deterioration of water quality due to siltation and accidental spillages.

The sources of such impacts have been identified as either:

- Transmission structure (Poleset and Angle Mast) locations where works are proposed in close proximity to watercourses.
- Conifer plantations that require felling along the new Ballyragget to Coolnabacky 110 kV line route.

In the case of structure locations in proximity to watercourses, works that could give rise to impacts would be associated with sediment release during the erection of polesets and angle masts or potential contamination of surface water from concrete and / or fuels used during construction.

The erection of polesets generally requires minimal disturbance to the ground. A foundation hole will be excavated, the pole erected and backfilled and with good construction practice there should be little risk of sediment loss. Duration on site is expected to be no more than a single day for each poleset. No concrete is required during the erection of polesets.

The construction of Angle Masts requires larger excavations and involves the construction concrete foundations. The duration of works at each Angle Mast location is c. 2.5 weeks, with the majority of this time due to concrete setting time.

In relation to conifer plantations, the potential for adverse impacts arises for the requirement to fell a corridor of 61m width where the line passes through conifer plantation. The proposed Ballyragget to Coolnabacky line passes through two areas of Conifer plantation within the Nore catchment, upstream of the Owenbeg River at Knockardagur (corridor of c. 890m length to be felled between Structures BC77-82) and at Garryglass (corridor of 930m length to be felled between Structures BC103-109).

At Knockardagur, the proposed line route is located c. 80m to the East (upstream) of the nearest mapped (un-named) watercourse which discharges to the designated section of the Owenbeg River c. 1.5km downstream. Drainage from the forested area is likely to be via a network of forestry drains towards this unnamed watercourse.

[22] The length of hedgerows and treelines impacted in each category is quantified based on the worst case scenario

At Garryglass, the proposed line route is located c. 130m to the West (upstream) of the nearest mapped (un-named) watercourse which discharges to the designated section of the Owenbeg River c. 1.5km downstream. Drainage from the forested area is via a network of forestry drains towards this un-named watercourse.

Potential impacts at forest locations can arise from the following activities:

- Clear felling of the forest corridor: Clearfelling of the forest corridor can give rise to both siltation risk from ground disturbance and nutrient enrichment from the release of phosphorous and nitrogen from brash decay. The main sources of siltation risk during forestry operations (such as clear felling) arise from disruption of the soil surface, which can cause soils to be exposed to erosion and the transportation of finer particles by overland flow, and the transportation of looser decaying organic particles. Decaying brash resulting from the clearfell can generate nutrients which could potentially lead to nutrient enrichment of the small first order streams entering the Owenbeg River.

- Removal of tree stumps to facilitate overhead line construction: Construction of the overhead line in clear felled forest areas can also give rise to sediment release. Wooden poles (weighing approximately 3 tonnes each) will be transported to the construction location by wide tracked machinery generating low ground pressure. In general tree stumps along the immediate line route would be removed in a 10m wide corridor to allow machinery tracking and avoid tracks coming off the vehicle. Uprooting of tree stumps can contribute significantly to ground disturbance and sediment release.

- Construction of polesets: The erection of polesets generally requires minimal disturbance to the ground. A foundation hole will be excavated, the pole erected and backfilled and with good construction practice there should be little risk of sediment loss. Construction activity is also spread out along the line route with a small footprint at each location. Duration on site is expected to be no more than half a day for each poleset.

- Potential windthrow arising from exposed forest edges post corridor clearance: The felling of a linear corridor will leave exposed forest stand edges devoid of foliage along the corridor. There is some risk of wind throw when these tress reach maturity (an additional 20 years) however this is very limited at present given the age and height of trees.

The main potential effects from ground disturbance are the risk of silt generation with silt entering the Owenbeg River via its tributaries. The potential adverse impacts on freshwater ecology due to release of silt include:

- Sedimentation - impacts include smothering of gravel beds with consequent loss of fish habitat and spawning and potential juvenile Freshwater Pearl Mussel habitat.
- Sediment deposition can also provide a base for growth of filamentous algae on gravel beds leading to a build up of sediment and loss of both fish spawning areas area and potential freshwater pearl mussel areas.
- Sedimentation impacts include smothering fish eggs and causing mortalities in fish of all ages, reducing abundance of food and impeding movement of fish.
- Sedimentation impacts also include smothering of macroinvertebrates.
- Loss of water quality of surface and groundwater along the line route by silt.

Nutrient enrichment of the receiving waters can also occur due to decay of brash left through the tree harvesting process. However the forest stands are located on mineral soils and adsorption of phosphorous on this material is likely to occur reducing the risk of nutrient phosphorous loss to the small streams running to the Owenbeg River. Should nutrients reach the small first order streams this could give rise to the following:

- Increased algal growth in the rivers leading to increased potential for sediment entrapment and build up with de-oxygenation of the river during the nocturnal cycle.

- Increased algal growth will lead to reduced habitat for fish spawning, macroinvertebrates and reduced potential habitat for freshwater pearl mussel.

Accidental leakage of oil and fuels from construction vehicles can have a direct impact on fish, fish food and fish habitats and other aquatic species.

Further details on the potential impacts on water quality are addressed in Section 10 Water (Hydrology and Hydrogeology). Potential secondary impacts on water quality of the ecologically sensitive River Barrow and River Nore cSAC are addressed in detail in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

The temporary loss of habitat may cause the loss of potential foraging and breeding sites. Based on the area of habitat that will suffer habitat loss, this impact is deemed to be a minor negative impact of low significance. Should the clearance of vegetation required to facilitate the development be carried out during the bird and bat breeding season then the magnitude and significance of this impact would be increased. Bat species may roost in large mature trees that provide suitable crevices and hollows. Any felling or trimming of large mature trees has the potential to impact on roosting bats.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. However, mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be minor in magnitude and of low significance. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal.

Operation Phase

Direct Habitat Impacts

The occasional clearance of vegetation beneath lines will cause temporary disturbance of habitats during the operation phase. This impact is difficult to quantify. However, it is likely to occur at frequencies of approximately 5 years and would only be carried out at discrete locations. Should the timing of this clearance activity be carried out outside of the bird breeding season the impact would be an imperceptible temporary negative impact.

Secondary Habitat Impacts

No secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the study area.

There will be an on-going risk of collision between birds and the overhead line throughout the operational phase of the development. It can be challenging to quantify the magnitude and significance of this potential negative impact. Studies in the literature generally conclude that collisions are not a biologically significant source of mortality for thriving bird populations (APLIC 1994). Should collisions occur between the power line and susceptible birds of high conservation concern (e.g. Whooper Swans; or other water birds) then this impact would be a significant moderate negative impact. However this impact is deemed unlikely as the design of the route has avoided those areas most sensitive to potential collision with susceptible species.

Following two seasons of winter bird surveys, only a single location (crossing of Owenbeg River at Boleybeg) has been identified where waterbirds may be at risk of collision. This possible impact is predicted to be a minor negative impact.

Impacts on Key Ecological Receptors

A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.32.

Site	Location	Ecological feature	Nature of impact	Impact description
Boleybawn woodland	Boleybawn Structure BC64 – BC65	Semi-natural woodland with watercourse feeding into cSAC downstream	Topping of trees within the site to facilitate clearance. Possible indirect impacts on water quality.	No direct impacts foreseen as line will span the site. Based on topography and dominant trees there is likely to be a requirement for minor topping of trees. The likely topping of trees / scrub will cause an ongoing long term imperceptible negative impact. Short-term deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.
Owenbeg River at Boleybeg	Line traverses site at Boleybeg Structure BC88 - BC89	River and adjacent habitat are designated within the River Barrow and River Nore cSAC.	Some minor topping of trees may be required. Possible indirect impacts on water quality	No direct impacts foreseen as line will span the site. Based on topography and dominant trees there is likely to be minimal requirement for vegetation clearance at the site. This unlikely impact would have an imperceptible negative impact on the site. Short-term deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.
Wet grassland and treelines at Boleybeg	Boleybeg Structures BC83-BC85	Wet grassland and treelines	Construction of Angle Mast and Poleset in wet grassland will cause direct loss of habitat Construction of poleset along treeline will require felling of mature trees. Probable topping of treelines between structures	The felling and topping of mature trees will cause a loss of semi-natural habitat within the site. This probable minor negative impact will be long-term in nature.
Timahoe Eskers pNHA / NR	0.4 km to South-east	Esker ridges with broadleaved woodland. Calcareous springs also occur	None foreseen	NA

Table 8.32 Predicted impacts on Key Ecological Receptors

8.4.4.6 Unit 6 - An Uprate of the Existing Ballyragget-Kilkenny 110kV overhead line

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance and access to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

In the case of newly proposed structures impacts upon the habitats of highest ecological value have been minimised by constraint identification and avoidance.

While other factors influence the siting of structures, ecological constraints have been addressed to the extent that the layout avoids the most important and sensitive habitats in the wider study area. In addition, due to the nature of the development it is possible to span certain habitats of conservation interest and therefore avoid direct impacts. Furthermore, as the proposed development involves work on an existing line, there will be no requirement for felling of forested areas or mature trees associated with hedgerows or treelines.

Short term habitat loss and disturbance is likely to occur within the works area at each structure location. It can be seen from Table 8.33 that a significant number of structures are located on hedgerows which can be regarded as generally being of local importance, low value.

Habitat	Number of polesets	Number of angle masts
Improved agricultural grassland (GA1)	51	7
Scrub (WS1)	1	
Hedgerows (WL1)	39	5
Wet grassland (GS4)	3	
Arable Crops (BC1)	6	2
Treelines (WL2)	1	
Dry Meadows and Grassy Verges (GS2)		1
Total	**90**	**14**

Table 8.33 Summary table of the habitats present at each structure location that are likely to be affected by short term habitat disturbance due to construction activities

In all, 49 hedgerows and six treelines overlap with 'indicative works areas' and therefore may suffer short term habitat loss and disturbance. It is estimated that a total length of 810 metres of hedgerow and treelines will be directly impacted by this assuming a worst case scenario where 15 metres of hedgerow is impacted at each of these locations (see Table 8.34). This probable adverse impact constitutes a minor short term impact, as following the completion of construction hedgerows will be reinstated with planting of native species.

Feature	Number overlapping with indicative works areas	Total length of hedgerow impacted (assuming impact zone of 15 m at each structure) (m)
Hedgerows (Type I)	33	495 m
Hedgerows (Type II)	15	225 m
Treelines	6	90 m
Total	**54**	**810 m**

Table 8.34 Number of hedgerows and treelines that overlap with 'indicative works areas'[23]

The impact of direct habitat loss resulting from the uprating of the existing line is deemed to be a minor negative impact; based mainly on the ecological value of the habitats and the restricted area of habitat involved. Much of the habitat loss will be short term in nature (following reinstatement) and will be a one off impact as it will not recur during the operation phase of the development.

Secondary Habitat Impacts

The construction will require temporary drainage at angle mast sites to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to angle mast locations means that this secondary impact will be a neutral impact.

Possible impacts on freshwater habitats during the construction phase include deterioration of water quality due to siltation and accidental spillages.

A number of structures are located in proximity to watercourses. Potential for adverse impacts on water quality at these locations are possible during construction works.

Works that could give rise to impacts would be associated with sediment release during the erection of polesets and angle masts or potential contamination of surface water from concrete and / or fuels used during construction.

Further details on the potential impacts on water quality are addressed in Section 10. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

The short term loss and disturbance of habitat may cause the loss of potential foraging and breeding sites. A low level of mammal activity was recorded throughout the study area. Based on the extent and type of habitat that will suffer habitat loss (see Table 8.33 above), this impact is deemed to be a short term minor negative impact.

A single Badger sett entrance was recorded within c. 10 m of a structure (BK 41), at Tullowglass, this entrance is sufficiently removed from the existing structure to avoid impacts. Furthermore, a recent survey (June 2013) confirmed that the sett was currently inactive. No evidence of otters was recorded from potentially suitable habitat. Further consultation with NPWS is recommended prior to commencement of development to ensure that potential impacts on badgers and other terrestrial mammals which have been identified are minimised.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. However, mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be imperceptible. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal.

[23] The length of hedgerows and treelines impacted in each category is quantified based on the worst case scenario

Due to the presence of the existing line there is no requirement for felling woodland or large mature trees therefore impacts on bat roost or foraging habitat are likely to be minimal.

Operation Phase

Direct Habitat Impacts

The occasional clearance of vegetation beneath lines will cause temporary disturbance of habitat during the operation phase. However, it is likely to occur at frequencies of approximately 5 years and would only be carried out at discrete locations. Should the timing of this clearance activity be carried out outside of the bird breeding season the impact would be an imperceptible temporary negative impact.

Secondary Habitat Impacts

No secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the study area.

The main collision risk associated with high voltage lines is due to the presence of earth wires, which are less visible than the main conductors. The absence of earth wires from most of the line route significantly reduces any risk of collision. Furthermore, collisions have not been reported along the existing line, which follows the same route and comprises a similar type of design. This unlikely impact is predicted to be an imperceptible negative impact.

Impacts on Key Ecological Receptors

A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.35.

Site	Location	Ecological feature	Nature of impact	Impact description
River Nore and River Barrow cSAC at Gragara and Mohil	Line traverses cSAC at Gragara and Mohil Structure BK048 – BK049	River and adjacent woodland habitat within cSAC	Indirect minor disturbance to adjacent woodland and scrub possible No requirement for woodland or scrub clearance	Temporary imperceptible negative impact
Wet Grassland at Brownstown	Structure BK73 - BK75	Wet grassland area within intensively managed agricultural landscape	Minor disturbance likely at structure locations	Short term imperceptible negative impact

Table 8.35 Predicted impacts on Key Ecological Receptors

8.4.4.7 Unit 7 - A new 110kV bay in the existing Kilkenny 110kV station

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity

Direct Habitat Loss

The proposed works are restricted to the existing substation site at Scart, and therefore no direct loss of semi-natural habitat is foreseen.

Secondary Habitat Impacts

Possible impacts on freshwater habitats during the construction phase include deterioration of water quality due to siltation and accidental spillages downstream of the proposed development site. Further details on the potential impacts on water quality are addressed in Section 10. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in the Natura Impact Statement presented in Appendix 8.2.

Birds and Mammals

As the proposed works are restricted to within the existing operational substation site, no impacts on birds or mammals are foreseen.

Operation Phase

Direct Habitat Impacts

No direct habitat impacts are foreseen throughout the operation phase of the development.

Secondary Habitat Impacts

No secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals

As the proposed works are restricted to within the existing operational substation site, no impacts on birds or mammals are foreseen during the operation phase of the project.

Impacts on Key Ecological Receptors

No 'Key Ecological Receptors' were identified in close proximity to the substation site at Scart, County Kilkenny.

8.4.4.8 Unit 8 - Modifications to existing Athy-Portlaoise 110kV line

Construction phase

Based on the nature of the proposed development and the baseline ecological data collected on the proposed development site, the following activities and ecological features warrant specific attention in the ecological impact assessment and hence in the design of the proposed scheme.

Sources of Impacts

- Site clearance and access to facilitate construction
- Stockpiling of material
- Drainage of surface water run-off
- Disturbance from construction activity

Potential Ecological Receptors of Impacts

- Habitats that occur within footprint of development
- Watercourses surrounding and downstream of the proposed development
- Bird and mammal activity
- Identified Key Ecological Receptors

Direct Habitat Loss

In the case of newly proposed structures impacts upon the habitats of highest ecological value have been minimised by constraint identification and avoidance.

While other factors influence the siting of structures, ecological constraints have been addressed to the extent that the layout avoids the most important and sensitive habitats in the wider study area. In addition, due to the nature of the development it is possible to span certain habitats of conservation interest and therefore avoid direct impacts. Furthermore, as the proposed development involves work on an existing line, there will be no requirement for felling of forested areas or mature trees associated with hedgerows or treelines.

Short term habitat loss and disturbance is likely to occur within the works area at each structure location. It can be seen from Table 8.36 that most structures are located in areas of low ecological importance (improved grassland and arable crops).

Habitat	Number of polesets	Number of angle masts
Improved agricultural grassland (GA1)	14	1
Recolonising Bare Ground (ED3)	1	
Hedgerows (WL1)	2	1
Drainage Ditches (FW4)	1	
Arable Crops (BC1)	1	
Total	**17**	**2**

Table 8.36 Summary table of the habitats present at each structure locations that are likely to be affected by short term habitat disturbance due to construction activities.

In the case of hedgerows, the 'indicative work areas' overlap with four Type I hedgerows and one Type II hedgerow. It is estimated that a total length of 75 metres of hedgerow to be directly impacted by this assuming a worst case scenario where 15 metres of hedgerow is impacted at each of these locations (see Table 8.31). This probable adverse impact constitutes an imperceptible short term impact, as following the completion of construction hedgerows will be reinstated with planting of native species.

Feature	Number overlapping with indicative works areas	Total length of hedgerow impacted (assuming impact zone of 15 m at each structure) (m)
Hedgerows (Type I)	4	60 m
Hedgerows (Type II)	1	15 m
Treelines	0	0 m
Total	**47**	**75 m**

Table 8.37 Number of hedgerows and treelines that overlap with 'indicative works areas'[24]

In summary, the impact of direct habitat loss resulting from the earthwire retrofit of the existing line is deemed to be an imperceptible negative impact; based mainly on the low ecological value of the habitats and the restricted area of habitat involved. Much of the habitat loss will be short term in nature (following reinstatement) and will be a one off impact as it will not recur during the operation phase of the development. Furthermore, the habitats have been disturbed in the past with the construction of the original Athy – Portlaoise 110kV line.

Secondary Habitat Impacts

The construction will require temporary drainage at angle mast sites to facilitate construction. This may cause a secondary impact on adjacent habitats by causing drying out of the surface. The absence of sensitive wetland habitats at and adjacent to angle mast locations means that this secondary impact will be a neutral impact.

Possible impacts on freshwater habitats during the construction phase include deterioration of water quality due to siltation and accidental spillages. Further details on the potential impacts on water quality are addressed in Section 10. Potential secondary impacts on water quality on the ecologically sensitive River Barrow and River Nore cSAC are addressed in the Natura Impact Statement presented in Appendix 8.2.

[24] The length of hedgerows and treelines impacted in each category is quantified based on the worst case scenario

Birds and Mammals
The temporary loss of habitat may cause the loss of potential foraging and breeding sites. Based on the area of habitat that will suffer habitat loss, this impact is deemed to be an imperceptible negative impact.

Potential exists for impacts on birds and mammals due to accidental collision and direct disturbance of resident birds and mammals during the construction phase. However, mammals and birds within the study area are thought to be sufficiently mobile so as to avoid collision and construction traffic will be relatively light so as not to cause undue disturbance therefore this temporary negative impact is deemed to be imperceptible. The level of disturbance will be minor and it is foreseen that the impacts associated with disturbance during construction will be minimal.

Due to the presence of the existing line there is no requirement for felling woodland or large mature trees therefore impacts on bat roost or foraging habitat are not foreseen.

Operation Phase
Direct Habitat Impacts
The occasional clearance of vegetation beneath lines will cause temporary disturbance of habitat during the operation phase. However, it is likely to occur at frequencies of approximately 5 years and would only be carried out at discrete locations. Should the timing of this clearance activity be carried out outside of the bird breeding season the impact would be an imperceptible temporary negative impact.

Secondary Habitat Impacts
No secondary habitat impacts are foreseen throughout the operation phase of the development.

Birds and Mammals
The level of operational traffic and ongoing maintenance is expected to be sufficiently low so as to avoid any disturbance impacts on birds and mammals that utilise the study area.

There will be an on-going risk of collision between birds and the overhead line throughout the operational phase of the development. A review of existing water bird data and surveys undertaken over two winter seasons (see Appendix 8.1) has shown that sensitive water bird species do not regularly occur in the area.

The main collision risk associated with high voltage lines is due to the presence of earth wires, which are less visible than the main conductors. This unlikely impact is predicted to be an imperceptible negative impact, however monitoring of possible collision casualties should be undertaken during winter.

Impacts on Key Ecological Receptors
A summary of predicted impacts on those Key Ecological Receptors that were identified in Section 8.3 above is presented in Table 8.38.

Site	Location	Ecological feature	Nature of impact	Impact description
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible indirect impacts on water quality.	No direct impacts foreseen as line will span the site. Based on topography and dominant trees, there is likely to be no requirement for vegetation clearance at the site. Short-term deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.

Timahoe Eskers pNHA / NR	0.4 km to South-east	Esker ridges with broadleaved woodland. Calcareous springs also occur	None foreseen	NA

Table 8.38 Predicted impacts on Key Ecological Receptors

8.4.5 POTENTIAL DECOMMISSIONING IMPACTS

The expected lifespan of the proposed development is expected to be 50 to 60 years. In the event that part of, or the entire proposed infrastructure is to be decommissioned, all structures, equipment and material to be decommissioned will be removed and the land reinstated. Any adverse impacts associated with decommissioning would be expected to be minor and short term. These impacts would be expected to be similar in type and magnitude to that encountered during the construction phase. However, in a relatively short time following decommissioning, the baseline ecological environment would be expected to return to the pre-development situation.

8.4.6 CUMULATIVE IMPACTS

The potential for cumulative impacts exists due to the presence of other developments in the vicinity of the proposed development. There are currently no other known permitted developments in the vicinity of the proposed development that could contribute to cumulative impacts. Taking into consideration the sum of the predicted impacts of the various elements of the project outlined above, no significant cumulative impacts are foreseen.

Taking into consideration the sum of the residual impacts of the various elements of the project as described in Section 8.6, no significant cumulative impacts are foreseen.

8.5 MITIGATION

This section provides recommendations for measures, which can avoid, reduce and, where possible, remedy of the predicted ecological impacts of the proposed development.

8.5.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

Few ecological impacts have been identified in relation to the construction of the Coolnabacky substation and therefore little mitigation is required as outlined below.

The main impact identified is the potential effects on surrounding watercourses due to site run-off during the construction and operation phase of the project. Measures to mitigate these potential impacts are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. Existing road infrastructure is to be used to access the substation site. A rigorous site selection process examined a number of alternative site locations, the results of which were presented in a site selection report. This selection process considered potential ecological impacts in recommending the current site as being most suitable.

It is intended that excavated material will be used on site for landscaping or for re-instatement measures. Other wastes will be removed for disposal at an appropriate licensed waste disposal facility (see Section 11.3). Note that this mitigation measure applies to all units.

In relation to potential impact on groundwater fed watercourses it is proposed that continuous monitoring will be employed where the contractor proposes any dewatering during the construction phase and proposals for dewatering and monitoring will be approved by the designers and ecologist for the project.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction and Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts. This plan shall incorporate the mitigation measures indicated in the EIS, and any others deemed necessary, and shall provide details of intended construction practice for the proposed development, including the following which are of relevance to ecology:

a) details of site security fencing and hoardings,
b) details of on-site car parking facilities for site workers during the course of construction,
c) details of the timing and routing of construction traffic to and from the construction site and associated directional signage, to include proposals to facilitate the delivery of abnormal loads to the site,
d) measures to obviate queuing of construction traffic on the adjoining road network,
e) measures to prevent the spillage or deposit of clay, rubble or other debris on the public road network,
f) alternative arrangements to be put in place for pedestrians and vehicles in the case of the closure of any public road during the course of site development works,
g) details of appropriate mitigation measures for noise, dust and vibration, and monitoring of such levels,
h)
i)Measures adopted during construction to prevent the spread of invasive species (such as Japanese Knotweed)

Monitoring of the construction phase shall be carried out by an environmental engineer and an ecologist each of whom shall be appropriately qualified and experienced, to ensure that all mitigation measures contained in the CEMP are implemented.

Specific mitigation relating to birds, bats and mammals
Construction: any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

Specific mitigation relating to water quality

Surface water Protection

Drainage and runoff controls will be installed prior to starting site clearance and earthworks.

Erosion Control
Erosion control (preventing runoff) is much more effective than sediment control in preventing water pollution. Erosion control is less subject to failure from high rainfall and requires less maintenance.

Erosion control measures to prevent runoff flowing across exposed or excavated ground and becoming polluted with sediments are provided for in the design. This is primarily the use of existing site drains to

channel runoff from up slope portions of a catchment around any construction areas or areas disturbed as a result of construction works.

Other inherent erosion control measures in the design include the design of roadways with minimum falls which do not exceed 15%.

Additional erosion control measures will be provided for in the construction management proposals. These measures will include the following:

- Minimise the area of exposed ground. Backfilling and construction will occur in conjunction with excavation and excavation will not proceed faster than the rate of construction. Re-vegetating of disturbed area to take place as soon as possible.
- Monitoring of the weather forecast prior to planning excavation works.
- Providing impermeable mats (plastic sheeting) as covers to mounded excavated material and open excavations during periods of heavy rainfall.

Silt fences to be provided at the toe of any significant areas where excavated material is stored.

Sediment Control

The Settlement Ponds are an integral part of the sediment control and containment measures on site and the protection of watercourses. Settlement ponds will be provided adjacent to the areas of the site where the most excavation or earthworks are planned.

The settlement ponds on the site have been sized to provide an adequate treatment volume for the first flush from the developed station and the ponds will ultimately have an attenuation volume so that surface water runoff can be limited to Greenfield runoff rates. This attenuation volume can be utilised as additional treatment volume in the construction phase when sediment generation is greatest.

The stone check dams which divide the pond into primary, secondary and final settlement compartments will further reduce turbulence which will aid settlement and provide filtering of water.

Surface water from the site will be discharged to existing vegetated drainage ditches within the site where further settlement of solids and filtering of surface water will occur prior to ultimate discharge to the adjacent watercourse.

Risk Management

The best way to manage pollution incidents is to prevent them. The contractor will identify and quantify risks associated with erosion and sediment for each work practice. Risks such as an unplanned bank collapse, mud slide and unforeseen rainfall event can be constantly assessed through geotechnical risk management and monitoring of weather forecasts.

Emergency Plans and Procedures

The contractor will prepare an emergency response plan and set of procedures for events likely to cause pollution including the pollution of watercourses with silt or sediment. There will be a contingency plan in place during construction which will be displayed at appropriate locations.

Equipment, Training and Corrective Action

Equipment required in responding to an emergency event with the capability of generating additional erosion and sediment laden runoff will be stored on site. Staff will be trained in the use and application of these temporary emergency measures which may involve the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood fibres and gravel) to stabilise or protect cleared areas;
- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Staff will be trained and made aware of procedures for notification of emergency events with the potential for pollution of watercourses.

Monitoring
Ongoing water monitoring at the discharge points and the receiving waters will be a key indicator of the effectiveness of the erosion and settlement control measures and the requirement for corrective action or the deployment of additional measures as outlined above. Methods, frequency and parameters to be monitored will be discussed and agreement sought with Inland Fisheries Ireland and National Parks and Wildlife Service prior to construction commencing.

Groundwater Quality Protection
The contractor will store all chemicals, hydrocarbon based fuels and oil filled equipment when not in use in bunded areas of the site.

The contractor will have emergency spill kits comprising oil absorbent materials on site and staff trained in the use of these. Emergency response measures to oil/ fuel leaks will be displayed prominently on the site.

Sustainable Drainage Systems (SuDS) in the drainage network design will be put in place early in the construction phase to filter and biodegrade hydrocarbons in the unlikely event that any enter the water on the site.

In the operational phase, all oil filled equipment will be stored in impermeable concrete bunds. Surface water generated in the bunded areas will be pumped out of the bunds by an oil sensitive pump. There will also be an oil separator on the drainage network. Surface water will be routed through ponds and vegetated drainage ditches before discharge to the watercourse.

There will be no large scale batching of concrete on the site. All concrete will come from a licensed supplier with environmental certification. No washing out of concrete supply trucks will be allowed on the site. No cementitious material will be allowed enter the water or groundwater on the site. Monitoring and emergency response measures for any escape of cementitious material will be put in place by the contractor.

Any foul waste generated in the construction and operational phase of the project will be collected and disposed off site by a licensed contractor. No contamination of groundwater will occur from foul waste.

8.5.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

Few ecological impacts have been identified in relation to the new connection to Coolnabacky from the existing Moneypoint-Dunstown 400kV line and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

All structure locations are removed from any habitats of ecological importance being confined to intensively farmed agricultural lands. Access to structure locations will be via existing tracks used by farm machinery on a regular basis as shown by the 'indicative access routes'.

Machinery used during construction will be cleaned prior to entering construction sites to prevent the spread of non-native invasive plants. In general, relevant recommendations in the manual 'Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' (NRA,

2008) will be followed to minimise the risk of invasive species becoming established in the development area.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals
Construction: Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

Prior to construction, once the felling requirements of the project are known, bat surveys of specific trees due for felling will be undertaken by a bat specialist. This survey will identify bat roosts that would be impacted due to felling. To proceed with the felling of those trees that may be identified as bat roosts, it will be necessary to acquire a derogation license from National Parks and Wildlife Service.

Guidance developed by the NRA[25] in relation to tree felling and hedgerow removal will be followed throughout the construction phase of the project. These measures will be outlined in detail in the Environmental Management Plan that is to be drawn up for the construction phase of the project.

8.5.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

Few ecological impacts have been identified in relation to the new connection to Coolnabacky and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
The route of the proposed connection avoids habitats of ecological value. Existing road infrastructure is to be used to access the substation site.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals
Construction: Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

[25] *National Roads Authority. Guidelines for the treatment of bats during construction of national road schemes. NRA, Dublin.*

8.5.4 UNIT 4 - A NEW 110KV / 38KV / MV SUBSTATION IN BALLYRAGGET, CO. KILKENNY

Few ecological impacts have been identified in relation to the construction of the Ballyragget substation and therefore little mitigation is required as outlined below.

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. The site adjoins an existing 38kV substation at Ballyragget. Existing road infrastructure is to be used to access the substation site.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 8.5.2.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals
Construction: Any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

Specific mitigation relating to water quality

Groundwater and surrounding surface water protection

The contractor will store all chemicals, hydrocarbon based fuels and oil filled equipment when not in use in bunded areas of the site.

The contractor will have emergency spill kits comprising oil absorbent materials on site and staff trained in the use of these. Emergency response measures to oil/ fuel leaks will be displayed prominently on the site.

In the operational phase, all oil filled equipment will be stored in impermeable concrete bunds. Surface water generated in the bunded areas will be pumped out of the bunds by an oil sensitive pump. There will also be an oil separator on the drainage network. Only after these measures will surface water then be recharged to groundwater through source control techniques (soakaways) in line with SuDS best management practices.

There will be no large scale batching of concrete on the site. All concrete will come from a licensed supplier with environmental certification. No washing out of concrete supply trucks will be allowed on the site. No cementitious material will be allowed enter the water or groundwater on the site. Monitoring and emergency response measures for any escape of cementitious material will be put in place by the contractor.

Foul waste generated in the construction of the project will be collected and disposed off site by a licensed contractor. Foul Waste generated in the unmanned station during the operational phase will be treated on site before being further treated and disposed of to ground water in a designed percolation

area. A suitably qualified professional has carried out a site assessment and designed the percolation area in accordance with EPA guidelines.

8.5.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, structures have been located removed from habitats of ecological importance. Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 8.5.2.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

Where hedgerows and treelines are directly impacted at structure locations (including surrounding works areas), reinstatement by planting with native hedgerow species will be undertaken immediately following the completion of construction works with the aim of re-establishing the structure of the hedgerow as soon as possible.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals

Collision Risk
To reduce the potential of bird fatalities associated with collisions, the current design of the scheme has avoided those areas highlighted as being important to bird species of conservation concern (see Appendix 8.1).

To further reduce any potential for impacts on sensitive bird species it is recommended that bird flight diverters be installed on the proposed line at a single location where the risk of collision is considered greatest, namely where the line crosses the Owenbeg River, at Boleybeg. Although few water birds were recorded utilising this area, it is probable that they use the river as a commuting route.

There are different types of flight deflector available and different types are suited to different local situations. Based on a review of literature, it is suggested that a spiral type marker similar to that used successfully in reducing swan collisions in the UK be considered (Frost 2008) (see Figure 8.4). These markers have recently been installed at water crossings along two 110kV lines in County Kerry in agreement with NPWS. The markers should be fitted on the earth wires at five metre intervals.

Figure 8.4 Spiral type bird flight diverter proposed for use at the crossing of Owenbeg River at Boleybeg

Disturbance

Prior to construction, once the felling requirements of the project are known, bat surveys of specific mature trees due for felling will be undertaken by a bat specialist. This survey will aim to confirm the number and location of Bat Roosts that would be impacted by felling. To proceed with the felling of those trees that may be identified as bat roosts, it will be necessary to acquire a derogation license from National Parks and Wildlife Service.

Guidance developed by the NRA[26] in relation to tree felling and hedgerow removal will be followed throughout the construction phase of the project. These measures will be outlined in detail in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project.

In relation to otters, during field surveys undertaken along the proposed line route, no evidence of Otter activity (spraints, slides, feeding remains, runs, holts or couches etc.) was identified at or in close proximity to watercourse crossings. These surveys paid particular attention to those areas where construction works are proposed in proximity to watercourses and concentrated on suitable otter habitat such as river banks and areas of nearby dense vegetation that would provide suitable cover.

However, it remains a possibility that otter territories could become established in proximity to the line route prior to construction commencing. Due to the strict legal protection of otters (and their resting or breeding places) it is recommended that further pre-construction surveys be undertaken at watercourses

[26] *National Roads Authority. Guidelines for the treatment of bats during construction of national road schemes. NRA, Dublin.*

and adjacent habitats that occur in close proximity to structure locations to confirm the absence of Otter breeding sites. Should an otter resting or breeding site be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[27,28].

Similarly with badgers, areas of woodland, scrub and hedgerows were surveyed for the presence of Badger setts throughout the length of the line route. No evidence of badgers were recorded during field surveys. While the survey results do not imply the absence of badgers from the area they do suggest the absence of badger setts (resting and breeding sites) and a relatively low level of badger activity at those locations where the proposed line route crosses suitable habitat. Due to the strict legal protection afforded to badgers (and their resting or breeding sites) it is recommended that further pre-construction surveys be undertaken in areas of suitable habitat that occur in close proximity to structure locations to confirm the continued absence of badger setts. Should a badger sett be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[29].

Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

Specific mitigation at structure locations in proximity of watercourses

Poleset Construction - Erosion & Sedimentation Control

Polesets are constructed over the short duration of 1 day per poleset. The main mitigation measure in this case will be to not carry out construction on days when there is rain or rain forecast (for the sensitive polesets noted above which are in the proximity of a watercourse). The contractor will monitor the weather forecast as part of the construction planning for the polesets.

It should be noted that, should groundwater seepage be encountered in excavations for the polesets, there is no requirement for de-watering. The top vegetated layer will be excavated carefully to keep the vegetation and root system intact. This layer will be placed carefully to one side and protected for the short duration of the construction. This layer will be reinstated following backfill around the polesets which will limit the potential for sediment runoff immediately after the construction of each poleset.

Excavated material will be stored safely so that the distance from the watercourse is maximised within the confines of the construction area and to ensure that there is a natural filter strip of vegetation between the excavated material and any water course. It should be noted that the entire volume of spoil per poleset will not exceed 40m^3 and the associated spoil heap will not occupy an area exceeding 20m^2. Sediment laden runoff from this small area during predominantly dry conditions is unlikely.

In the unlikely event of significant non-forecasted rainfall the contractor will have access to emergency sediment control measures in a site compound that can be transported to the poleset construction location within a short time period. These measures would include the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood
- fibres and gravel) to stabilise or protect cleared areas;

[27] *National Roads Authority. Guidelines for the treatment of Otters prior to the construction of National Road Schemes. NRA, Dublin.*
[28] *Northern Ireland Environment Agency. Otters and Development. NIEA, Belfast.*
[29] *National Roads Authority. Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. NRA, Dublin.*

- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Polesets Construction - Pollution Control

The risk of non-sediment related pollution during the construction for the polesets is minimal and may only be associated with oil leaks from the plant and machinery used in the construction. The following measures will be in place to mitigate the risk of and to respond in the event of an oil leak:

- All vehicles will be regularly serviced and kept in good condition;
- Vehicles will be checked daily for indications of leaking oil;
- No refuelling operations will take place at the construction site of the polesets;
- Spill kits will be readily available to drivers/ operators of plant and machinery; and
- Drivers/ operators of plant and machinery will be trained in the use of spill kits and aware of the contractor's emergency procedures for dealing with and reporting oil and fuel spills.

Angle Mast Construction - Erosion & Sedimentation Control

Angle Masts foundations are constructed over a period of less than 2.5 weeks per Angle Mast with the majority of this time required due to concrete setting time. Once the foundation is constructed and backfilled, the foundation is generally left for approximately 28 days before the mast is assembled. The mast assembly will cause no ground disturbance and takes place over a very short duration of time. The major mitigation measure in this case will be to not carry out construction at sensitive Angle Mast locations noted above which are in the proximity of a watercourse when there is a significant amount of rainfall forecast. The contractor will monitor the weather forecast as part of the construction planning for these Angle Masts.

Should the excavations for the Angle Mast foundations require dewatering due to groundwater seepage this water will be pumped through a portable settlement tank before discharge to the nearest drainage ditch. Existing vegetation as a filter strip prior to discharge to the drainage ditch will also be utilised where conditions allow.

The top vegetated layer will be excavated carefully to keep the vegetation and root system intact. This layer will be placed carefully to one side and protected for the short duration of the construction. This layer will be reinstated over the foundations following backfill around the Angle Mast foundations which will limit the potential for sediment runoff immediately after the construction of each Angle Mast foundation.

Excavated material will be stored safely so that the distance from the watercourse is maximised within the confines of the construction area and to ensure that there is a natural filter strip of vegetation between the excavated material and any water course. It should be noted that the entire volume of spoil per Angle Mast will not exceed 140 m^3. Much of this excavated material will be removed from site immediately as it will not be required for backfilling and landscaping around the Angle Mast foundations. The excavated material stored adjacent to the Angle Mast construction area for the short duration of the works is therefore unlikely to exceed 50-66 m3. The associated spoil heap will not occupy an area exceeding 36-46m^2. Sediment laden runoff from this small area during predominantly dry conditions is unlikely.

In the unlikely event of significant non-forecasted rainfall during the construction period, the contractor will have access to emergency sediment control measures in a site compound that can be transported to the Angle Mast construction location within a short time period. These measures would include the following:

- Impermeable matting (plastic sheeting);
- Silt fences (posts & geotextile material);
- Mulching capability (organic materials, straw, wood chip, bark or other wood fibres and gravel) to stabilise or protect cleared areas;
- Settlement Tanks (portable propriety settlement tanks that can be transported to required areas).

Angle Mast Construction - Pollution Control

The risk of non-sediment related pollution during the construction for the Angle Masts is minimal and may only be associated with oil leaks from the plant and machinery used in the construction or from the escape of cementitious material during the foundation construction. No chemicals will be stored at the construction site.

The following measures will be in place to mitigate the risk of and to respond in the event of an oil leak:

- There will be no fuel or oil stored at the Angle Mast construction location;
- All vehicles will be regularly serviced and kept in good condition;
- Vehicles will be checked daily for indications of leaking oil or fuel;
- No refuelling operations will take place at the construction site of the Angle Masts;
- Spill kits will be readily available to drivers/ operators of plant and machinery; and
- Drivers/ operators of plant and machinery will be trained in the use of spill kits and aware of the contractor's emergency procedures for dealing with and reporting oil and fuel spills.

The following measures will be in place to mitigate the risk of and to respond to the escape of cementitious material during foundation construction for Angle Masts:

- There will be no on site batching of concrete, grout or cement mortar at the Angle Mast construction locations;
- No washing out of concrete delivery vehicles or dumping of excess concrete will be permitted at the Angle Mast construction sites;
- Concrete skips, concrete pumps and machine buckets will be positioned so as not to allow slewing over water while placing concrete (the use of skips and pumps not envisaged);
- Freshly placed Concrete is to be covered to avoid surface washing away in heavy rain; and
- Clean up any spillages of cementitious materials immediately and disposed of correctly.

If temporary welfare facilities are required at the sensitive Angle Mast construction locations following investigation of alternative arrangements, these will be self-contained units and foul waste generated will be collected and disposed of by an approved licensed contractor.

Specific mitigation relating to felling of conifer plantations

General Mitigation Measures

- Forestry Operations within the Freshwater Pearl Mussel Catchment areas, including at the forest stands within the Owenbeg river catchment will be carried out strictly in accordance with the Forestry and Freshwater Pearl Mussel Requirements Site Assessment and Mitigation Measures published by the Forest Service.
- The Forestry and Freshwater Pearl Mussel Site Assessment Forms A and B which have been revised by Coillte and NPWS shall be used for all forestry operations within the Freshwater Pearl Mussel Catchments associated with the overhead line construction.
- The contractor appointed to harvest the timber will be fully briefed on the ecological sensitivity of the site and will work in collaboration with an ecologist to set out the proposed method and delineate working areas.
- Construction will adhere to the guidance document issued by Inland Fisheries Ireland South-eastern River Basin District Maintenance and Protection of the Inland Fisheries resource during road construction and improvement works published by the South-eastern Regional Fisheries Board. (Note that a new Guidance document is expected to be published shortly by Inland Fisheries Ireland entitled "Guidelines on Protection of Fisheries During Construction Works in and adjacent to Waters". Construction will adhere to this guidance once published).
- Should the need for any in stream crossings by construction vehicles be identified the Inland Fisheries Ireland shall be consulted and the approach to the crossing agreed with them. Any and all watercourses which have to be traversed during site development and associated track/road construction works should be effectively bridged prior to commencement.
- Work method statements should be developed and implemented by construction contractors for poleset construction.

- Access to construction areas should utilise existing field tracks to the extent possible to minimise the need for additional track construction.
- Proposed access tracks should be assessed by a qualified geotechnical engineer and ecologist to ensure the route minimises surface disturbance and silt generation.
- Re-fuelling of vehicles should not take place on site but in a secure bunded area well away from any watercourse.
- All oils and fuels should be stored in secure bunded areas, and particular care and attention should be taken during refuelling and maintenance operations on plant and equipment

Sediment Impact Mitigation

- Brash from the clearfell should be utilised as roading material for pole construction tracked vehicles to reduce impact on ground thereby minimising ground disturbance
- Existing forest drainage shall be reinstated where damaged to allow use to be made of vegetated ground areas to reduce the flow of silt overland.
- Silt traps and silt fences, such as geotextile membrane and straw bales, should be placed in the forest drainage network to minimise silt loss. These should be inspected and cleaned regularly. A series of stepped silt traps fences to trap any silt/debris will be installed. Their purpose will be to slow water flow and allow settlement of solids to occur. These will be regularly inspected and cleared out to ensure they are functioning properly.
- Traps should not be constructed immediately adjacent to natural water courses. A buffer zone should remain between the silt trap and the watercourse with natural vegetation left intact so as to assist in silt interception. They should be installed on forest drains.
- Pesticide if used for suppression of growth beneath the established overhead line should be minimised and used strictly in accordance with Forest Service Guidelines. Any plants used for the re-establishment of the site should be pre-dipped if required.
- Brash arising from forest felling should be used as roading for poling contractor tracked vehicles to the extent possible to avoid ground disturbance.

Nutrient Impact Mitigation

Potential nutrient release, particularly phosphorous will be limited by the fact that the trees are not at maturity and the quantities of brash generated will be relatively small compared to mature forest felling hence nutrient generation from brash decay will be low. In addition the forest stands are located on mineral soil types which generally adsorb phosphorous further reducing potential release to the aquatic environment. To further reduce the potential from nutrient impact:

- Brash should be windrowed at a distance of 20m from any main drain identified on site when the corridors through the forest stands have been clearfelled.

Monitoring

An ecologist will be present during the construction phase to ensure that all mitigation measures are adhered to, and to monitor the effectiveness of mitigation.

8.5.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

Mitigation by avoidance

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 8.5.2.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Also see hedgerows and treelines text under *Mitigation by remedy* under Section 8.5.5.

Specific mitigation relating to birds, bats and mammals
Disturbance
No impacts on bat roost sites are foreseen due to the proposed works on the Ballyragget to Kilkenny as there is no requirement for felling of mature trees.

In relation to Otters, during field surveys undertaken along the proposed line route, no evidence of Otter activity (spraints, slides, feeding remains, runs, holts or couches etc.) was identified at or in proximity to watercourse crossings. These surveys paid particular attention to those areas where construction works are proposed in proximity to watercourses and concentrated on suitable otter habitat such as river banks and areas of nearby dense vegetation that would provide suitable cover.

However, it remains a possibility that Otter territories could become established in proximity to the line route prior to construction commencing. Due to the strict legal protection afforded to Otters (and their resting or breeding places) it is recommended that further pre-construction surveys be undertaken at watercourses and adjacent habitats that occur in close proximity to structure locations to confirm the absence of Otter breeding sites. Should an otter resting or breeding site be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[30,31].

Similarly with Badgers, areas of woodland, scrub and hedgerows were surveyed for the presence of Badger setts throughout the length of the line route. No evidence of badger were recorded during field surveys. While the survey results do not imply the absence of Badgers from the area they do suggest the absence of Badger setts (resting and breeding sites) and a relatively low level of Badger activity at those locations where the proposed line route crosses suitable habitat. Due to the strict legal protection afforded to Badgers (and their resting or breeding sites) it is recommended that further pre-construction surveys be undertaken in areas of suitable habitat that occur in close proximity to structure locations to confirm the continued absence of Badger setts. Should a Badger sett be identified during these surveys then appropriate measures and procedures will be followed in consultation with NPWS. Details of the pre-construction survey methodology and the approach to be taken will be outlined in the Construction Environmental Management Plan (CEMP) that is to be drawn up for the construction phase of the project with reference to relevant guidance documents[32].

Site preparation (including all vegetation clearance) should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

[30] *National Roads Authority. Guidelines for the treatment of Otters prior to the construction of National Road Schemes. NRA, Dublin.*
[31] *Northern Ireland Environment Agency. Otters and Development. NIEA, Belfast.*
[32] *National Roads Authority. Guidelines for the treatment of Badgers prior to the construction of National Road Schemes. NRA, Dublin.*

Specific mitigation at structure locations in proximity of watercourses
Those measures outlined in Section 8.5.5 will be applied at those structure locations that occur in close proximity to watercourses.

8.5.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

Few ecological impacts have been identified in relation to the construction of the Ballyragget substation and therefore little mitigation is required as outlined below.

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints. The proposed works are confined to the site of the existing Kilkenny substation. Existing road infrastructure is to be used to access the substation site.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 8.5.2.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Potential impacts caused by spillages etc. during the operational phase will be reduced by keeping spill kits and other appropriate equipment on-site.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts. A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals
Disturbance
Construction: Any vegetation clearance that may be required to facilitate construction should be restricted, as much as possible, to time periods outside the bird and bat breeding season (March to September).

8.5.8 UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

Measures to mitigate potential impacts on surrounding watercourses are outlined in Section 10 Water (Hydrology and Hydrogeology).

Mitigation by avoidance
Consideration of various design options has led to the current proposed design that is deemed to have the least ecological impact taking account all other location factors and constraints.

Where possible, access to structure locations will be via existing tracks used by farm machinery on a regular basis.

See also paragraph on NRA Guidelines on the Management of Noxious Weeds etc. under Section 8.5.2.

Mitigation by reduction
Impacts will be minimised by limiting the extent of the works to the development footprint.

Mitigation by remedy
Whilst the avoidance of sensitive areas is the primary means of reducing the potential impacts, further measures will aim to address unavoidable or unforeseen impacts.

A Construction Environmental Management Plan (CEMP) will be drawn up and implemented during the course of construction to remediate the potential negative impacts.

Specific mitigation relating to birds, bats and mammals
Measures outlined in Section 8.5.6 above should be undertaken to minimise any potential impacts on birds, bats and mammal species prior to and during the construction phase of the Athy to Portlaoise line route.

Also see hedgerows and treelines text under *Mitigation by remedy* under Section 8.5.5.

8.6 RESIDUAL IMPACT

8.6.1 UNIT 1 - NEW 400/110KV GIS SUBSTATION AT COOLNABACKY TOWNLAND, CO. LAOIS

Taking the above mitigation measures (Section 8.5.1) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant.

Table 8.39 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to surface water run-off during construction and operation.	Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.	Broad range of measures to control surface water run-off during the construction and operation phase.	Possible short term (construction related) imperceptible negative impact on downstream watercourses.

Table 8.39 Predicted impacts on Key Ecological Receptors

8.6.2 UNIT 2 - NEW CONNECTION TO COOLNABACKY FROM THE EXISTING MONEYPOINT-DUNSTOWN 400KV LINE

Taking the above mitigation measures (Section 8.5.2) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.40 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to surface water run-off during construction.	Minimal tree topping may be required. Unlikely on-going imperceptible negative impact	Any vegetation clearance (on-going) to avoid bird breeding season.	Unlikely on-going imperceptible negative impact
				Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses	Broad range of measures to control surface water run-off during the construction phase (see Section 10)	Unlikely short term (construction) imperceptible negative impact on downstream watercourses

Table 8.40 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.6.3 UNIT 3 NEW CONNECTION TO COOLNABACKY FROM THE EXISTING ATHY-PORTLAOISE 110KV LINE

Taking the above mitigation measures (Section 8.5.3) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.41 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to surface water run-off during construction.	Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses	Broad range of measures to control surface water run-off during the construction phase (see Section 10)	Possible short term (construction) imperceptible negative impact on downstream watercourses

Table 8.41 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.6.4 UNIT 4 - A NEW 110KV / 38KV / MV SUBSTATION IN BALLYRAGGET, CO. KILKENNY

Taking the above mitigation measures (Section 8.5.4) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.42 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
River Nore	300 m to West of Ballyragget substation	Main channel of the River Nore which is designated within the River Barrow and Nore cSAC.	Possible deterioration in water quality due to run-off during construction.	Deterioration in water quality of surface / ground waters may impact on aquatic habitats and species of downstream watercourses.	Broad range of measures to prevent impacts on water quality during the construction phase.	Unlikely short term (construction) imperceptible negative impact on downstream watercourses.

Table 8.42 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.6.5 UNIT 5 - A NEW 110KV OVERHEAD LINE BETWEEN BALLYRAGGET AND COOLNABACKY

Taking the above mitigation measures (Section 8.5.5) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.43 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Boleybawn woodland	Boleybawn Structure BC64 – BC65	Semi-natural woodland with watercourse feeding into cSAC downstream	Topping of trees within the site to facilitate clearance. Possible indirect impacts on water quality.	Long term imperceptible negative impact. Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.	Development of CEMP to advise on access, bat surveys etc.; Site clearance / tree topping to avoid bird breeding season Broad range of measures to control surface water run-off during the construction phase.	Long term imperceptible negative impact. Possible short term (construction) imperceptible negative impact on downstream watercourses.
Owenbeg River at Boleybeg	Line traverses site at Boleybeg Structure BC88 - BC89	River and adjacent habitat are designated within the River Barrow and River Nore cSAC.	Some minor topping of trees may be required. Possible collision risk to birds. Possible indirect impacts on water quality	Unlikely impact would have an imperceptible negative impact on the site. Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses.	Development of CEMP to advise on access, bat surveys etc.; Site clearance / tree topping to avoid bird breeding season; Line markers to reduce collision risk Broad range of measures to control surface water run-off during the construction phase.	Unlikely impact would have an imperceptible negative impact on the site. Unlikely short term (construction) imperceptible negative impact on downstream watercourses.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Wet grassland and treelines at Boleybeg	Boleybeg Structures BC83-BC85	Wet grassland and treelines	Tree felling and habitat disturbance	Probable minor negative impact will be long-term in nature.	Development of CEMP to advise on access, bat surveys etc.; Site clearance / tree topping to avoid bird breeding season	Probable imperceptible negative impact will be long-term in nature.

Table 8.43 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.6.6 UNIT 6 - AN UPRATE OF THE EXISTING BALLYRAGGET-KILKENNY 110KV OVERHEAD LINE

Taking the above mitigation measures (Section 8.5.6) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.44 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
River Nore and River Barrow cSAC at Gragara and Mohil	Line traverses cSAC at Gragara and Mohil Structure BK048 – BK049	River and adjacent woodland and scrub habitat within cSAC	Indirect minor disturbance to adjacent woodland and scrub possible No requirement for woodland or scrub clearance	Temporary imperceptible negative impact	Development of CEMP to advise on construction at sensitive locations Replacement structures to be moved away from scrub and woodland habitat Broad range of measures to prevent impacts on surrounding watercourses	None foreseen

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Wet Grassland at Brownstown	Structure BK73 - BK75	Wet grassland area within intensively managed agricultural landscape	Minor disturbance likely at structure locations	Short term imperceptible negative impact	Development of CEMP to advise on construction at sensitive locations, access etc.	Short term imperceptible negative impact

Table 8.44 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.6.7 UNIT 7 - A NEW 110KV BAY IN THE EXISTING KILKENNY 110KV STATION

Taking the above mitigation measures (Section 8.5.7) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant.

8.6.8 UNIT 8 - MODIFICATIONS TO EXISTING ATHY-PORTLAOISE 110KV LINE

Taking the above mitigation measures (Section 8.5.8) into account the following predicted residual impacts will apply.

Considering the amount of habitat that will be affected and the overall significance of these habitats, it is predicted that the proposed development will have a negligible negative impact on the ecological value of the study area. The inevitable loss of habitat within the site boundary is deemed to be of low significance.

The off-site impacts on flora, terrestrial habitats, birds and mammals will be negligible and are not considered significant. Table 8.45 presents a summary of residual impacts relevant to specific Key Ecological Receptors following the adoption of mitigation measures.

Site	Location	Ecological feature	Nature of Impact	Impact description	Mitigation	Residual Impact
Un-named watercourse and associated hedgerow	Northern and western boundary of Coolnabacky substation site	Spring fed watercourse and adjacent hedgerow	Possible deterioration in water quality due to surface water run-off during construction and operation.	Minimal tree topping may be required. Unlikely on-going imperceptible negative impact	Any vegetation clearance (on-going) to avoid bird breeding season.	Unlikely on-going imperceptible negative impact
				Deterioration in water quality of surface waters may impact on aquatic habitats and species of downstream watercourses	Broad range of measures to control surface water run-off during the construction phase (see Section 10).	Unlikely short term (construction) imperceptible negative impact on downstream watercourses.

Table 8.45 Predicted Impacts on Key Ecological Receptors after Adoption of Mitigation Measures

8.7 INTERRELATIONSHIPS BETWEEN ENVIRONMENTAL FACTORS

This section should be read in conjunction with Section 10 *Water (Hydrology and Hydrogeology)* for a full understanding of the main interactions between these environmental topics.

Potential interactions between *Cultural Heritage* and *Soils and Geology* (Section 9), *Water* (Section 10) and *Ecology* (Section 8) were identified in the recommended mitigation of archaeological testing at the proposed 400kV tower locations and the proposed substation sites (Unit 1 Coolnabacky and Unit 4 Ballyragget). Such testing has the potential to impact on watercourses, soils and flora and fauna. Ecological interactions are mitigated as the habitats in the footprint of the structures and substation sites where test trenching is proposed are confirmed to be of low ecological significance.