

Tyrone - Cavan Interconnector

Appendix 7.8
Information to Inform Habitats Regulations Assessment
(2019)

SONI

Quality information

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1. Introduction

1.1 Background

AECOM was commissioned by SONI to provide updated ecological information for the proposed Tyrone – Cavan Interconnector (the ‘Tyrone – Cavan Interconnector’).

1.1.1 Purpose of this Report

This report provides an update to the Information to Inform Habitats Regulations Assessment, prepared for the Consolidated ES Addendum (2015), to inform the determination of whether the project will be possible to complete without having any adverse effects on the integrity of any European site.

Since the original ‘Information for Habitats Regulations Assessment’ in 2015 a number of important legal judgments have been handed down such that in considering Regulation 43 of The Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) key steps in the assessment process have been modified.

In accordance with UK guidance, the term Habitats Regulations Assessment (HRA) collectively refers to the two-staged processes of which Screening and Appropriate Assessment (AA) are Stages One and Two respectively. Following the completion of the Stage One - Screening Assessment, should an Appropriate Assessment be required, additional information is considered before a decision can be made.

1.2 Legal and Planning Context

Article 6(3) of the Habitats Directive 92/43/EEC (“the Habitats Directive”) provides that:

“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public”.

Article 6(3) is transposed in Northern Ireland by Regulation 43 of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995¹:

“43. —

1. A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which:
 - a. Is likely to have a significant effect on a Natura site in Northern Ireland (either alone or in combination with other plans or projects), and
 - b. Is not directly connected with or necessary to the management of the site, shall make an appropriate assessment of the implications for the site in view of that site’s conservation objectives...
5. In light of the conclusions of the assessment, and subject to Regulation 44 [relating to Considerations of overriding public interest], the Department may give consent for the operation only after having ascertained that the plan or project will not adversely affect the integrity of the site”.

The term European site is defined in Section 1.3.

¹ Statutory Rule No. 280.

It is well-established that the question of whether a project, either alone or in combination with other plans and projects, is likely to have a significant effect on a European site is, according to the ECJ in the Waddenzee case, to be viewed on a precautionary basis:²

“In the light, in particular, of the precautionary principle, which is one of the foundations of the high level of protection pursued by Community policy on the environment, in accordance with the first sub-paragraph of Article 174(2) EC, by reference to which the Habitats Directive must be interpreted, such a risk exists if it cannot be excluded on the basis of objective information that the plan or project will have significant effects on the site concerned.”³

An Appropriate Assessment or ‘Stage 2’ HRA is required where significant effects on a European site cannot be excluded on the basis of objective information. If triggered, AA or ‘Stage 2’ HRA then determines whether the project will adversely affect the integrity of the site, in light of the site’s conservation objectives.

For any appropriate assessment, the question of whether the project would have an adverse effect on the integrity of the European site is again to be approached on a precautionary basis, as confirmed by Waddenzee:

“It is therefore apparent that the plan or project in question may be granted authorisation only on the condition that the competent national authorities are convinced that it will not adversely affect the integrity of the site concerned. So, where doubt remains as to the absence of adverse effects on the integrity of the site linked to the plan or project being considered, the competent authority will have to refuse authorisation”. (paragraphs 56 and 57).

In Peter Sweetman v. An Bord Pleanála Case C-258/11, the CJEU confirmed that:

“So far as concerns the assessment carried out under Article 6(3) of the Habitats Directive, it should be pointed out that it cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the protected site concerned (see, to this effect, Case C-404/09 Commission v Spain, paragraph 100 and the case-law cited). It is for the national court to establish whether the assessment of the implications for the site meets these requirements” (paragraph 44).

Further, in respect of adverse effects on integrity:

“Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of sites of Community importance, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal” (paragraph 49).

In consideration of applying the precautionary principle, guidance from the European Commission⁴ has been taken into account which can be summarised as:

- Projects are not required to aim for zero risk;
- That assessments should apply the precautionary principle in proportion to the risk that has been identified (the test of proportionality); and

² Landelijke Vereniging Tot Behoud Van De Waddenzee Nederlandse Vereniging Tot Bescherming Van Vogels v Staatssecretaris Van Landbouw, Natuurbeheer En Visser Main v Swansea City Council (C-127/02) [2004] ECR I-7405.

³ [44].

⁴ Communication from the Commission on the precautionary principle. COM/2000/0001 final.

- That there should be consistent application of the precautionary principle such that it is non-discriminatory.

1.2.1 Recent CJEU Case Law

Since the preparation of the previous information to inform an appropriate assessment, the CJEU has issued further judgments on the interpretation of the Habitats Directive (and thus corresponding provisions in the Habitats Regulations). The following cases in particular are of relevance to the application of the Directive and Regulations in this case.

In People Over Wind & Sweetman v. Coillte Teoranta (C-323/17), the CJEU held that:

“Article 6(3) of the Habitats Directive must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the Screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site”.⁵

In a further judgment, Holohan v An Bord Pleanála (C-461/17), the CJEU emphasised the requirements of an appropriate assessment:

“... all aspects which might affect those objectives must be identified and since the assessment carried out must contain complete, precise and definitive findings in that regard, it must be held that all the habitats and species for which the site is protected must be catalogued. A failure, in that assessment, to identify the entirety of the habitats and species for which the site has been listed would be to disregard the abovementioned requirements and...would not be sufficient to dispel all reasonable scientific doubt as to the absence of adverse effects on the integrity of the protected site”.⁶

Further:

“... an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.”⁷

In Grace & Sweetman, C-164/17 the CJEU also confirmed that:

“it is only when it is sufficiently certain that a measure will make an effective contribution to avoiding harm, guaranteeing beyond all reasonable doubt that the project will not adversely affect the integrity of the area, that such a measure may be taken into consideration when the appropriate assessment is carried out”.⁸

In Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu Case C-293/17, “the Dutch Nitrogen Case”, it was held that:

“Article 6(3) of Directive 92/43 must be interpreted as meaning that an ‘appropriate assessment’ within the meaning of that provision may not take into account the existence of ‘conservation measures’ within the meaning of paragraph 1 of that article, ‘preventive measures’ within the meaning of paragraph 2 of that article, measures specifically adopted for a programme such as that at issue in the main proceedings or ‘autonomous’ measures, in so far as those measures are not part of that programme,

⁵ At [40].

⁶ At [37].

⁷ At [40].

⁸ At [51]. See too the findings in that case on the approach to the future creation of a new habitat, which is aimed at compensating for the loss of that habitat type in a protected area: [52]-[53] and [57].

if the expected benefits of those measures are not certain at the time of that assessment” (ruling and see paragraphs 126 and 130).

These principles have been applied when considering the review of the information submitted to support any appropriate assessment carried out by the Department. In particular, mitigation has not been taken into account as part of Stage 1 Screening.

As part of the process of drawing together this ‘Information to Inform HRA’ full consideration of the conservation objectives for each site together with the citations for the designated sites have been considered. The citations catalogue all those habitats and species for which the site has been designated.

1.3 European Sites

In Northern Ireland, European sites include:

- Special Areas of Conservation (SAC) designated for habitats, plants, and non-bird species;
- Special Protection Areas (SPA) designated for bird species and their habitats; and,
- Any ‘candidate’ or ‘proposed’ sites including ‘cSAC’, Sites of Community Interest (SCI) (which have been formally advertised).

Additionally, in Northern Ireland, under Planning Policy Statement 2: Natural Heritage (PPS2), whilst not part of the European Natura 2000 network, Ramsar sites are also included. As noted in the PP2:

“Ramsar sites are wetlands listed under the Ramsar Convention to protect those of international importance. It requires signatories to formulate and implement their planning for the conservation and wise use of wetlands and their resources. As a matter of policy, the UK Government has chosen to apply the procedures under the Habitats Regulations in respect of Ramsar sites. This position is the stated policy within this PPS.” (paragraph 2.6)

2. Project Description

2.1 Site Description

The habitats present within the survey area are generally ecologically impoverished and of low value both intrinsically and as supporting habitats for protected flora and fauna. The site is dominated by intensive agriculture and the species and habitats reflect this with semi-improved and improved grassland and species poor heavily managed hedgerows regularly occurring. Those areas of greater value to biodiversity have been avoided as far as possible by the development proposals and many years of ecological survey have allowed the route to be refined to avoid those areas of greater value in the local context. The Tyrone – Cavan Interconnector covers a large area of land but has a small footprint and therefore the potential for effects is low. Permanent land take is low and habitats lost are generally of low ecological value.

A description of the site and its ecology are presented in the Consolidated ES (2013), its Addendum (2015) and Technical Reports submitted for the 2017 Public Inquiry and the 2019 Addendum. A location map is provided in Figure 7.4 in Volume 3 of this 2019 Addendum.

2.2 Proposed Works

A detailed description of the proposed works is presented in the previously submitted reports for the project – planning drawings, Consolidated ES (2013), its Addendum (2015) and Technical Reports submitted for the 2017 Public Inquiry. In summary, The Tyrone – Cavan Interconnector project includes:

- The construction and operation of a new 275kV / 400kV (source) substation at Turleenan townland, north-east of Moy, County Tyrone;
- The construction and operation of two 275kV terminal towers to enable connection of the Turleenan substation to NIE's existing 275kV overhead line and the removal of one existing 275kV tower;
- The construction and operation of a single circuit 400kV overhead transmission line supported by 102 towers for a distance of 34.1km from the source substation (at Turleenan) to the border where it will tie into the future ESB network. The overhead line will continue on in Ireland⁹ with all further towers being promoted by EirGrid for placement within that jurisdiction. Because of the meandering nature of the border, the overhead line will over sail a portion of land within the Northern Ireland townland of Crossbane for a short distance (0.2km); and,
- Associated Works to include site levelling, site preparation works, modification of existing access points, construction of new access points, construction of new access lanes, construction of working areas, stringing areas, guarding, site boundary fencing and related mitigation works. Formation of access tracks and other associated works at the substation and at the tower locations.

3. Methodology

3.1 Overview

The Screening assessment identifies whether or not the Tyrone – Cavan Interconnector will have likely significant effects on European sites.

The methodology for the Stage 1 HRA follows that for Screening in the EC guidance (EC, 2001). Changes to HRA practice since 2001 (particularly relating to use of mitigation in an HRA Stage 1 from court rulings) are referenced where relevant.

This assessment has followed these guidance documents:

- A statement on Common Standards for Monitoring Designated Sites (1998);
- Common Standards Monitoring for Designated Sites: First Six Year Report (2006);
- The Habitats Regulations Assessment Handbook (2013);
- Communication from the Commission on the precautionary principle (2000);
- The Precautionary Principle: decision making under uncertainty (2017); and
- The European Commission Managing Natura 2000 sites (the Provisions of Article 6 of the Habitats Directive 92/43/EEC) (2018).

3.1.1 The Source-Pathway-Receptor Model and Zones of Influence

The 'source-pathway-receptor' conceptual model is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no likelihood for the effect to occur. An example of this model is provided below:

- Source(s), e.g. excavation of tower bases;
- Pathway(s) e.g. visual and noise pollution from plant and operatives; and,
- Receptor(s) e.g. whooper swan disturbance on wintering grounds.

The model is focused solely on the qualifying features for which sites are designated as per the latest conservation objectives from the Department of Agriculture, Environment and Rural Affairs (DAERA) and National Parks and Wildlife Service (NPWS) websites which are referenced throughout this report where relevant (e.g. Annex A).

⁹ Sometimes referred to as the Republic of Ireland. In this report, the term 'Ireland' refers to the nation of Ireland. The term the 'island of Ireland' refers to both Northern Ireland and Ireland.

This assessment has considered all qualifying features (both habitats and species) with potential to interact with the Tyrone – Cavan Interconnector in line with Holohan whereby “an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site” (emphasis added).

Whilst the attention has been directed to the conservation objectives of the European sites and qualifying features of those sites, nonetheless, in line with Holohan other qualifying features of European sites have been considered. In that regard, no source-pathway-receptor relationships to the Tyrone – Cavan Interconnector such that the Regulations and Directives would be compromised, were found to exist. Given the findings in relation to habitats and species outside the European sites in question there will be no implications that are liable to affect the conservation objectives of those European sites.

The Tyrone – Cavan Interconnector may have the potential to result in a number of impacts, which could potentially affect the qualifying features of European sites. The analysis of these effects, using scientific knowledge and professional judgement, leads to the identification of a “zone of influence” for each effect (i.e. the distance at which the impact of the Tyrone – Cavan Interconnector could have potential effects, using professional judgement and published guidance).

3.2 Screening (HRA Stage 1)

In summary, the steps for the Screening are:

- Describe the project and determine whether it is directly connected with or necessary to the management of the site;
- Describe the baseline environment; and,
- The Screening assessment itself;
 - Identify ‘relevant’ European sites, which are those sites potentially connected to the Tyrone – Cavan Interconnector by source-pathway-receptor links; and,
 - Conclude if links to ‘relevant’ sites could give rise to likely significant effects either alone or in-combination.

3.2.1 Site Visits

The assessment was informed by both desk assessment and site visits to the Tyrone – Cavan Interconnector location. The relevant findings of this desk assessment and site visits are presented in Chapter 7 (Ecology) of the 2019 Addendum.

3.2.2 Consultation

In addition to consultation during the preparation of the previously submitted reports, a meeting was held in May 2019 with DAERA – NED (NIEA) to confirm the scope and main findings of the 2018 and 2019 ecological surveys. During this meeting, especially when presented with the findings of the wintering bird reports, NIEA confirmed that they were satisfied that no new issues had arisen. They reiterated their request for mitigation in the form of bird diverters at the north of the Tyrone – Cavan Interconnector and where it crosses the River Blackwater. It was confirmed in the meeting that this is still planned from Towers 1- 13 and Towers 30 to 43, as previously agreed.

3.3 Appropriate Assessment (HRA Stage 2)

The protection afforded to SPA is delivered through Article 6 of the Habitats Directive. Article 6(2) requires member states to take appropriate steps to avoid the deterioration of natural habitats and disturbance of species for which the sites have been designated, in so far as the disturbance could be significant in relation to the objectives of the Directive. Article 6(3) and Article 6(4) require that a plan or project not directly connected with the management of the site, but likely to have a significant effect upon it, either individually or in combination with other plans or projects, must be subject to an appropriate assessment of its implications on the site, in view of the sites’ conservation objectives.

4. Stage 1 Screening

4.1 Identification of European Sites

This Section identifies the 'relevant' European sites, i.e. those which are potentially connected to the Tyrone – Cavan Interconnector by source-pathway-receptor links.

The Tyrone – Cavan Interconnector does not cross over any European site and is not immediately adjacent to any sites. To determine which European sites, require consideration in the context of the Tyrone – Cavan Interconnector for the purposes of a HRA, a review of all European sites with the potential for impacts was carried out. Although the Tyrone – Cavan Interconnector will be constructed in Northern Ireland, there is also a potential for activities in Northern Ireland to have, in some circumstances, impacts on designated European sites in Ireland. This Report therefore identifies those European sites in Ireland that, due to their qualifying features, or due to an identifiable linkage to potential impacts of the Tyrone – Cavan Interconnector, could be subject to similar impacts to European sites within Northern Ireland.

Whooper swan *Cygnus cygnus* was identified as a species of concern in early consultation with NIEA, based on the fact that whooper swan has poor manoeuvrability and forward vision, increasing its vulnerability to poorly marked flight obstacles. Their vulnerability is compounded during the winter months, when birds frequently make twice-daily flights between feeding and roosting sites in very low light conditions. Swans are at greatest risk when flying at low levels, especially when they are climbing after taking off from a site, or descending as they land. In relation to the Tyrone – Cavan Interconnector, a number of potential locations were identified where potential interactions might occur.

The first of these potential interactions is where movements between north / north-east Northern Ireland, and the Blackwater River Valley are involved. Part of this journey is made via Lough Neagh as swans fly around or across the large waterbody. On the other hand, movements between staging posts to the north west (feeding areas around Lough Foyle and Donegal where the birds initially make landfall after their migration from Iceland) and sites at Derryscollop and the Keady Lakes are unlikely to be affected by a collision risk, due to the north – south orientation of the Tyrone – Cavan Interconnector with respect to flight direction to and from those staging sites (i.e. the flightlines will not cross the Tyrone – Cavan Interconnector).

A second potential interaction was with swans using traditional wintering grounds in the Blackwater River valley. However, previously published information to date has not detected any flightlines between feeding and roosting sites crossing the proposed overhead line route.

Finally, there is a potential for birds undertaking movements into the Blackwater River valley to cross the Tyrone – Cavan Interconnector, particularly towards its northern end. The routing of the Tyrone – Cavan Interconnector along relatively low ground between surrounding hills is likely to further reduce collision risk for overflying birds.

Despite this, it was considered that all SPA, for which whooper swan is a qualifying species, should be included in the assessment to examine the potential for connections to populations within the study area. Criteria were designed to identify those sites that have the potential to be affected by the construction and operation of the Tyrone – Cavan Interconnector and took into account both the characteristics of the Tyrone – Cavan Interconnector and the ecological characteristics of European site qualifying features and their conservation objectives.

In addition to whooper swan, potential impacts on Bewick's swans were considered. Bewick's swans have declined in recent decades and now rarely occur on the island of Ireland, indeed they have not been recorded in Northern Ireland by the annual monitoring Wetland Bird Survey (WeBS) since 2009 (Frost *et al.* 2019). For this reason, they were not a criterion for determining which European sites to screen for likely significant effects.

SPA such as Lough Oughter Complex SPA, Lough Swilly SPA, and Lough Foyle SPA were also included. This is because whooper swan is a qualifying feature for these sites and migratory movements are known to occur between these sites, principally from the 'staging sites' at Lough Foyle and Lough Swilly to sites further south in autumn with a return migration in spring. In addition, irregular movements of small numbers of birds may also occur (Robinson *et al.*, 2004). For SPA, qualifying features

considered as sensitive, are those birds which were recorded in the study area, and that are categorised as highly or moderately collision prone.

The sites that have been considered using the criteria outlined above, together with their qualifying features are listed in Table 4.1 and their locations presented in Figure 7.4 in Volume 3 of the 2019 Addendum.

A total of 11 European sites with 17 different designations on them (multiple designations on several sites) have been identified. In two cases (Magheraveely Marl Loughs / Kilroosky Lough Cluster and Slieve Beagh – Mullaghfad – Lisnaskea / Slieve Beagh) sites straddle the international border and share qualifying features.

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
Lough Neagh and Lough Beg SPA	<p>Breeding common tern. Breeding bird assemblage.</p> <p>Wintering Bewick’s swan. Whooper swan (Annex I species).</p> <p>Wintering waterfowl assemblage.</p> <p>Regularly supports >20,000 waterfowl.</p>	8 km to closest point of Tyrone – Cavan Interconnector	<p>During the breeding season the area regularly supports nationally important numbers of breeding common tern, and a nationally important assemblage of waterfowl. Over winter, the area regularly supports internationally important numbers of Bewick’s swan, whooper swan, pochard, tufted duck and goldeneye and nationally important numbers of 13 additional species of waterfowl. Over winter the area regularly supports 99,262 waterfowl.</p> <p>The <u>Conservation Objectives</u> for this site are: <i>To maintain each feature in favourable condition.</i></p>	<p>YES - the SPA is designated for migrating species such as wintering whooper and Bewick’s swan populations, individuals of which may fly over the Tyrone – Cavan Interconnector or use the wider area during operation.</p> <p>YES – the substation site contains a small tributary of the River Rhone which flows into the River Blackwater. Waters from the Blackwater River and its catchment, discharge into the SPA site. The River Blackwater is over sailed by the proposed overhead line. A Tower is present on either side of the River (Towers 32 and 33).</p> <p>Tower 32 is approximately 80m from the northern bank and Tower 33 is approximately 280m south of the River Blackwater.</p>
Lough Neagh and Lough Beg Ramsar	<p>A particularly good representative example of natural or near-natural wetlands, common to more than one biogeographic region.</p> <p>Regularly supports internationally important numbers of wildfowl species and regularly supports nationally important numbers of breeding common tern.</p>	4km to closest point of Tyrone – Cavan Interconnector	<p>This site is the largest freshwater lake in the United Kingdom. Lough Neagh is a relatively shallow body of water supporting beds of submerged aquatic vegetation fringed by associated species-rich damp grassland, reedbeds, islands, fens, marginal swampy woodland and pasture. Other interesting vegetation types include those associated with pockets of cut-over bog, basalt rock outcrops and boulders, and the mobile sandy shore.</p> <p>Over winter the area regularly supports internationally important numbers of Bewick’s and whooper swans.</p> <p>During the breeding season the area regularly supports nationally important numbers of breeding common tern.</p>	<p>YES - waters from the River Blackwater and its catchment, discharge into the site. The River Blackwater is over sailed by the proposed overhead line. A Tower is present on either side of the River (Towers 32 and 33).</p> <p>Tower 32 is approximately 80m from the northern bank and Tower 33 is approximately 280m south of the River Blackwater.</p> <p>YES – the substation site contains a small tributary of the River Rhone which flows into the River Blackwater. Waters from the Blackwater River and its catchment discharge into the site.</p>

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
	Supports an important assemblage of breeding birds.		Supports nationally important numbers of breeding great crested grebe, gadwall, pochard, tufted duck, snipe and redshank.	The River Blackwater is over sailed by the proposed overhead line. A Tower is present on either side of the River (Towers 32 and 33). Tower 32 is 80m from the northern bank and Tower 33 is approximately 280m south of the River Blackwater.
	Supports a population of pollan.		One of the few locations on the island of Ireland and one of the two known locations in the UK for pollan.	
Peatlands Park SAC	Degraded raised bogs still capable of natural regeneration.	4km to closest point of Tyrone – Cavan Interconnector	The site is one of the largest areas of degraded raised bog in Northern Ireland, extensively cut for turf in the past. Regeneration is taking place over a large part of the site. Notable species include Northern Ireland Priority Species bog rosemary.	NO - the SAC is not hydrologically connected to the Tyrone – Cavan Interconnector.
	Bog woodland (Priority Habitat).		The woodland appears to have developed through seral succession over a shallow, peat-bottomed lake. Downy birch is dominant; with grey willow one of the main associates, and mosses abundant.	
	Active raised bogs (Priority Habitat).		Active raised bogs are peat-forming ecosystems that have developed during thousands of years of peat accumulation, to such an extent that the depth of peat isolates them from the influence of groundwater. Active bog vegetation is characteristic of intact (primary) bog surfaces, but peat-forming communities may occur on bogs which have previously been cut for peat (secondary surfaces). Present as a qualifying feature, but not a primary reason for selection of this site	
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles.		This habitat type comprises a range of woodland types dominated by mixtures of oak and birch. It is characteristic of base-poor soils in areas of at least moderately high rainfall in northern and western parts of the UK. Present as a qualifying feature, but not a primary reason for selection of this site.	

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
Slieve Beagh – Mullaghfad – Lisnaskea SPA	Breeding hen harrier.	23 km to closest point of Tyrone – Cavan Interconnector.	The site includes coniferous plantations, blanket bog, wet and dry heath, grass moor, scrub and limited semi-improved agricultural grassland. The mix of forestry and open areas provides optimum habitat conditions for breeding harriers.	NO – the Tyrone – Cavan Interconnector is outside the feasible foraging area of moorland, of Slieve Beagh breeding hen harriers.
Slieve Beagh SPA (Ireland)		20km to closest point of Tyrone – Cavan Interconnector.		
Slieve Beagh SAC	Natural dystrophic lakes and ponds.	24km to closest point of Tyrone – Cavan Interconnector.	The site contains the largest concentration of medium to large sized dystrophic lakes in Northern Ireland.	NO - the SAC Is not hydrologically connected to the Tyrone – Cavan Interconnector.
	Blanket bogs (Priority Habitat).		One of the most extensive areas of intact blanket bog in Northern Ireland.	
	European dry heath.		Present as a qualifying feature, but not a primary reason for selection of this site.	
Slieve Beagh Ramsar	Blanket bog and nationally important wetland habitats.	25km to closest point of Tyrone – Cavan Interconnector.	The site is a large and relatively intact example of a blanket bog and one of the best examples of this habitat in the UK. It also contains nationally important examples of transitional and alkaline fen and oligotrophic/mesotrophic lakes.	NO - the SAC Is not hydrologically or hydrogeologically connected to the Tyrone – Cavan Interconnector.
Magheraveely Marl Loughs SAC	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. (Priority Habitat).	24km to closest point of Tyrone – Cavan Interconnector.	Contiguous with Kilroosky Lough Cluster SAC (Ireland). This site is important because the water has not been influenced by nutrient enrichment and remains clear, with high lime content and low plant nutrient content.	NO - the SAC Is not hydrogeologically connected to the Tyrone – Cavan Interconnector.
	Alkaline fen		The lakes are surrounded by an inundation zone containing significant stands of alkaline fen vegetation, including a number of notable plant species.	

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> (Priority Habitat)		Present as a qualifying feature, but not a primary reason for selection of this site.	
	White clawed crayfish (Annex II species)		A strong isolated population of white clawed crayfish. This site has been selected because of its hydrological isolation and the absence of crayfish plague from Northern Ireland.	
Magheraveely Marl Loughs Ramsar	A combination of hard water and low nutrient status has produced loughs that approach the classic marl lake condition.	24 km to closest point of Tyrone – Cavan Interconnector.	Lakes are surrounded by wetlands whose interest is also indicated by high calcium concentration. Biological interest is related to the presence of vegetation which reflects these calcareous conditions, including rich and extensive stonewort (<i>Charophyte</i>) communities with several rare and local species, including <i>Chara aspera</i> , <i>C. curta</i> , <i>C. hispida</i> , <i>C. pedunculata</i> and <i>C. rudis</i> .	NO - the SAC is not hydrologically connected to the Tyrone – Cavan Interconnector.
Slieve Gullion SAC	European dry heath	24 km to closest point of Tyrone – Cavan Interconnector.	Slieve Gullion is one of the largest expanses of European dry heath in Northern Ireland. The site contains a number of dry heath communities, reflecting the wide range of environmental conditions.	NO - the designated site is at a higher altitude than the proposed construction works and is not hydrologically connected to the Tyrone – Cavan Interconnector. .
Montiaghs Moss SAC	Marsh fritillary butterfly	24km to closest point of Tyrone – Cavan Interconnector.	Montiaghs Moss is an extensive area of cut-over bog, which contains one of the largest and longest-established populations of marsh fritillary in Northern Ireland. The population is very dispersed throughout the entire site, reflecting the extent of habitat that is suitable for the species.	NO - the species will not be impacted by the Tyrone – Cavan Interconnector because it does not migrate and its supporting habitat is remote from the Tyrone – Cavan Interconnector.
Kilroosky Lough Cluster SAC (Ireland)	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. (Priority Habitat).	29 km to closest point of Tyrone – Cavan Interconnector.	Lakes are of moderate to good quality and contain well-developed and diverse stonewort beds.	NO - the SAC is not hydrogeologically connected to the Tyrone – Cavan Interconnector.
	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> (Priority Habitat).		Small but good examples of semi-natural lake margin habitats. A number of notable plant and invertebrate species have been recorded from the site including the Red Data Book species, round leaved wintergreen.	

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
	Alkaline fen.		Small but good examples of semi-natural lake margin habitats.	
	White clawed crayfish (Annex II species).		Two of the loughs support good populations of white clawed crayfish, which requires calcium-rich waters to maintain its exoskeleton.	
Deroran Bog SAC	Active raised bog	29km to closest point of Tyrone – Cavan Interconnector.	Typical of western bogs within the drumlin belt of Northern Ireland, being rather irregular in shape. The bog displays the classic convex domed profile typical of lowland raised bogs but has a relatively subdued microtopography with occasional small pools, and a few large hummocks.	NO - the designated site is in a different water catchment to the Tyrone – Cavan Interconnector and is therefore hydrologically isolated from the Tyrone – Cavan Interconnector
Lough Oughter Complex SPA (Ireland)	Wintering whooper swan (Annex I species). Wigeon Breeding great crested grebe. Wetland and waterbirds.	43km to closest point of Tyrone – Cavan Interconnector.	Internationally important numbers of whooper swan, nationally important numbers of wigeon, great crested grebe. The <u>Conservation Objectives</u> for this site are <i>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</i>	YES - the site is designated for migrating species such as wintering whooper swan populations, individuals of which may fly over the Tyrone – Cavan Interconnector or use the wider area during operation. NO – for wigeon, the site is distant and birds are unlikely to cross the proposed overhead line. NO – other water birds are likely to be restricted to vicinity of the SPA during the breeding season NO – wetlands, the site is in a different water catchment to the Tyrone – Cavan Interconnector and is therefore hydrologically isolated from the Tyrone – Cavan Interconnector.
Lough Foyle SPA	Wintering, whooper swan. Bar-tailed godwit (Annex I species). Light-bellied brent goose. Wintering waterfowl assemblage. Regularly supports >20,000 waterfowl.	74km to closest point of Tyrone – Cavan Interconnector.	Internationally important numbers of whooper swan, bar-tailed godwit, light-bellied brent goose. Nationally important numbers of a further 20 waterfowl species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland. The <u>Conservation Objectives</u> for this site are: <i>To maintain each feature in favourable condition.</i>	YES - The site is designated for migrating species such as wintering whooper swan populations, individuals of which may fly over the Tyrone – Cavan Interconnector or use the wider area during operation.

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
Lough Foyle Ramsar	<p>The site qualifies under Criterion 1a & 1c of the Ramsar Convention by being a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position.</p> <p>Also, under Criterion 3a by supporting over 20,000 waterfowl, under Criterion 3b by regularly supporting substantial numbers of individuals from particular groups of waterfowl which are indicative of wetland values, productivity, and diversity, and under Criterion 3c by regularly supporting internationally important numbers of whooper swan.</p>	74km to closest point of Tyrone – Cavan Interconnector.	<p>The wetland complex includes intertidal sand and mudflats with extensive seagrass beds, saltmarsh, estuaries and associated brackish ditches.</p> <p>The site supports substantial numbers of important populations of whooper swan, light-bellied brent goose, bar-tailed godwit, and nationally important numbers of red-throated diver, great crested grebe, mute swan, Bewick’s swan, greylag goose, shelduck, teal, mallard, wigeon, eider, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, curlew, redshank, and greenshank.</p>	<p>NO – wetland, the site is in a different catchment to the works and is hydrologically isolated from the Tyrone – Cavan Interconnector.</p> <p>YES - the site is designated for migrating species such as wintering whooper swan populations, individuals of which may fly over the Tyrone – Cavan Interconnector or use the wider area during operation.</p>
Lough Swilly SPA (Ireland)	<p>Wintering, whooper swan. Greenland white-fronted goose (Annex I species). Greylag goose.</p> <p>Wintering waterfowl assemblage.</p> <p>Regularly supports >20,000 waterfowl.</p>	85km to closest point of Tyrone – Cavan Interconnector.	<p>Internationally important numbers of whooper swan, Greenland white-fronted goose, greylag goose, nationally important numbers of a further 21 species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland.</p> <p>The <u>Conservation Objectives</u> for this site are:</p> <p><i>To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Lough Swilly SPA, which is defined by the following list of attributes and targets (note that</i></p>	<p>YES - The site is designated for migrating species such as wintering whooper swan populations, individuals of which may fly over the Tyrone – Cavan Interconnector or use the wider area during operation.</p>

Table 4.1: European sites under consideration.

Site	Qualifying feature(s)	Distance from Tyrone – Cavan Interconnector	Feature Description	Identification of Features for Further Consideration
			<i>this objective relates to all waterbird species of Special Conservation Interest).</i>	

4.2 Evaluation of Likely Significant Effects

The Tyrone – Cavan Interconnector is not directly connected with, or necessary to, the management of the European sites under consideration.

The Tyrone – Cavan Interconnector does not impact directly on any European sites. No element of the project is within or adjacent to any European site. The focus of the Screening exercise is therefore on the identification of any indirect effects on European sites in view of their conservation interests that may occur during the construction or the operation of the Tyrone – Cavan Interconnector. Seventeen European sites were examined for any connections between the sites or their qualifying features and the Tyrone – Cavan Interconnector in terms of distance, hydrological / hydrogeological linkages or the presence of mobile qualifying features with the potential to be impacted by the development. The results of this initial consideration without mitigation are presented in Table 4.1. Of these 17 sites, only six were revealed to have features for further consideration within the Screening matrix. The rest were discarded.

The following six sites were identified for progression to the Screening matrix:

- Lough Neagh and Lough Beg SPA;
- Lough Neagh and Lough Beg Ramsar Site;
- Lough Foyle SPA;
- Lough Foyle Ramsar Site;
- Lough Swilly SPA; and,
- Lough Oughter Complex SPA.

In order to determine if the Tyrone – Cavan Interconnector could result in any likely significant effects on these sites in view of their conservation objectives, the following process was carried out.

The qualifying features (i.e. habitats / species) for the identified European sites were reviewed and any possible connectivity to potential effects of the development were identified and assessed. The conservation status and conservation objectives of species and habitats have been considered based on status assessments, where available. Additional considerations and information gathering exercises informed the Screening appraisal including extensive desk study, consultation (with statutory and non-statutory agencies (including NIEA, Irish Whooper Swan Study Group (IWSSG) and RSPB) and findings of extensive multi-year ecological field surveys. These studies provided the robust data required to establish bird usage within the study area and to inform the assessment in terms of determining the likelihood of movements of these birds outside of the study area thereby assessing possible connectivity with remote SPA sites.

Wintering bird surveys have been completed for the Tyrone – Cavan Interconnector for approximately 10 years. The most recent of which are presented in Appendix 7.7 of the 2019 Addendum. This depth of survey data has been used to draw the conclusions of this assessment.

In accordance with Regulation 43(1) of the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended), this assessment will inform the Department of Agriculture, Environment and Rural Affairs (DAERA) as the competent authority. It considers whether the Tyrone – Cavan Interconnector, (either alone or in combination with other plans or projects) and being not directly connected with or necessary to the management of any site) is likely to have a significant effect on the identified European sites.

The Screening appraisal for the Tyrone – Cavan Interconnector is detailed in Tables 4.2 – 4.8. All qualifying features of the European sites (Lough Neagh and Lough Beg SPA, Lough Neagh and Lough Beg Ramsar Site, Lough Foyle SPA, Lough Swilly SPA and Lough Oughter Complex SPA) are considered. This assessment considers both the likely significant effects from the project alone and in combination with other projects. In relation to in combination effects, all assessment has been completed in light of the findings of Chapter 14 of this 2019 Addendum and including those other plans or projects that are specifically outlined in Section 5.11. Mitigation measures such as flight diverters and the mitigation measures contained in the Outline CEMP are not considered during the Screening Assessment.

The Screening stage requires a description of the Tyrone – Cavan Interconnector. This description has been presented in Section 2 of this report and further detail is has been presented the planning submission for the project and is therefore not repeated in all of the following matrices.

Table 4.2: Screening Matrix - Lough Neagh and Lough Beg SPA.

Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA

Brief Description of the European Site	Lough Neagh and Lough Beg SPA site is located in the centre of Northern Ireland. The site is the largest freshwater lake in the UK, it is a relatively shallow body of water supporting beds of submerged aquatic vegetation fringed by associated species-rich damp grassland, reedbeds, islands, fens, marginal swampy woodland and pasture. It has migrant populations of pochard, tufted duck, scaup, goldeneye, Bewick's swan, whooper swan and common tern.
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Assessment Criteria

Describe the individual elements of the Tyrone – Cavan Interconnector (either alone or in combination with other plans or proposed developments) likely to give rise to impacts on the European site	The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the European site or alter the habitats within its boundary. The substation and tower locations have been sited and designed to minimise all emissions to water resulting from the Tyrone – Cavan Interconnector. The Tyrone – Cavan Interconnector has been assessed for its water quality implications (surface and groundwater). Potential impacts on SPA site features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights.
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Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:

Size and scale	None of the works will take place within the SPA boundary.
Land-take	There will not be any land take from the SPA site.
Distance from the European site or key features of the site	The Tyrone – Cavan Interconnector is approximately 8.6km to the south west of the SPA and connected by a ~11km hydrological link to Lough Neagh. Whooper swans which may use the SPA as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop, both at the northern end of the Tyrone – Cavan Interconnector. The nearest known wintering site for swans is at Edenderry Lough, 1km to the west of the proposed line. Birds wintering in the Blackwater River valley use sites ~4km to the west of the line and Derryscollop is 3km to the east. Swans have been seen feeding during times of flooding near overhead lines at Clonbeg, 1km from the Tyrone – Cavan Interconnector.
Resource requirements (water abstraction etc.)	No abstraction is planned during the construction or operation of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	Potential impacts to the SPA site have been minimised through appropriate tower and substation siting. There will be localised excavation for tower bases, remote from the SPA site. Excavations for the substation will be extensive, but also remote from the site. Potential sources of emissions are silt, discharges from dewatering of the excavations required for tower foundations and small-scale hydrocarbon leaks from plant. There is a ~8.6km hydrological link to the SPA via the slow moving, local drainage network and the River Blackwater. There is a ~19km hydrological link to the SPA from the crossing point of the River Blackwater. In the unlikely event that any sediment would reach the River Blackwater either directly or via local drains, (especially from the closest situated towers of 32 and 33) it would quickly settle out downstream from its entry point on the journey towards Lough Neagh. The likely volumes of sediment in such a potential situation would be minimal when compared to the suspended sediments during a flood.
Excavation requirements	There will be localised excavation for tower bases, remote from the site. Excavations for the substation will be extensive, but also remote from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.

Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA

Duration of construction, operation, decommissioning etc.	The Tyrone – Cavan Interconnector will take 3 years to complete. SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project was to be decommissioned the method and impacts will be the same or less than implementation to the construction phase of the project. Further details are provided in Section 2 of this report.
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Other	None.
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Describe any likely changes to the site arising as a result of:

Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the SPA site.
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Disturbance to key species	The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential number of whooper swan collisions with the overhead line would be minimal and that likely significant effects on the whooper swan population can be excluded.
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Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
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Reduction in species density	No reduction in species density will occur as no disturbance will occur to qualifying features as described above.
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Changes in key indicators of conservation value (water quality etc.)	Any changes to the key indicators of conservation value would be unlikely given the scale and nature of the works. As described above, given the nature of the hydrological link, it is considered that sediment from the construction phase, would not pass into local watercourses and proceed to Lough Neagh, to impact its water quality. Therefore, it would not cause likely significant effects.
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Climate change	The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts. The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.
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Describe any likely impacts on the European site as a whole in terms of: Interference with the key relationships that define the structure of the site; Interference with the key relationships that define the function of the site	Whooper swans that may use the site, and are part of the SPA population, may cross the route of the proposed overhead line to wintering grounds in the Blackwater River valley and areas further south. Birds using the valley have been shown to be generally site-faithful and are at low risk of collision with the line. A series of wintering bird surveys monitored the movements of birds within the Blackwater Valley and concluded that the overhead line will not present a collision risk to this local population due to the lack of regular flightlines (occasional flights only were noted during surveys) over the proposed alignment. It is considered that the Tyrone – Cavan Interconnector will not impact the key relationships that define the structure or function of the site. The Consolidated Environmental Statement (2013) provides greater detail on these local populations.
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the SPA area and does not involve any land take.
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Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of habitats.
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Disruption	Given the orientation of the line, and the low collision risk as described above, the implementation of the Tyrone – Cavan Interconnector is not likely to disrupt species/populations of the SPA site.
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Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA

Disturbance	Disturbance to the SPA site or its mobile features would be unlikely given the orientation of the line, and the low collision risk as described above, as a result of the Tyrone – Cavan Interconnector.
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Change to key elements of the site	There will be no change to the key elements of the site.
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Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	<p>The main element of potential concern, with regard to the qualifying features of the site, is the collision risk for wintering swans that use the site for at least part of the winter. Some of the whooper swans that winter in the general vicinity of the Tyrone – Cavan Interconnector (Blackwater River valley, Derryscollop, Keady Lakes) may overfly the proposed overhead line route, however no regular flightlines have been identified. Individual birds may be at risk of collision, but this potential impact is considered de minimis in terms of the overall population and therefore would result in no likely significant effects.</p>
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Similarly, without mitigation measures, given the nature and scale of the construction works involved, the potential likelihood of sediment emissions reaching Lough Neagh given the hydrological link, and impacting on the water quality of Lough Neagh would be de minimis and would cause no likely significant effects.

In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effects on the qualifying features of Lough Neagh and Lough Beg SPA and its conservation objectives either alone or in-combination with other plans or projects. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Table 4.3: Screening Matrix - Lough Neagh and Lough Beg Ramsar Site.

Screening Matrix: Lough Neagh and Lough Beg Ramsar Site

Brief Description of the European Site	<p>Lough Neagh and Lough Beg Ramsar site is located in the centre of Northern Ireland. The site is the largest freshwater lake in the UK, it is a relatively shallow body of water supporting beds of submerged aquatic vegetation fringed by associated species-rich damp grassland, reedbeds, islands, fens, marginal swampy woodland and pasture. The site also supports an assemblage of rare vascular plants which include eight-stemmed waterwort, marsh pea, Irish lady's tresses, alder buckthorn, narrow small-reed and holy grass. The Lough and its margins are also home to rare invertebrates - a freshwater shrimp, eight beetles, five hoverflies, seven moths and two butterflies. The site regularly supports substantial numbers of waterfowl indicative of wetland values, productivity and diversity; an important assemblage of breeding birds including, in nationally important numbers, great crested grebe, gadwall, pochard, tufted duck, snipe and redshank, together with other important breeding wetland (shelduck, teal, shoveler, lapwing and curlew); over 20,000 waterfowl in winter. including nationally and internationally important numbers of pochard, tufted duck, goldeneye, little grebe, great crested grebe, cormorant, mute swan, greylag goose, shelduck, wigeon, gadwall, teal, mallard, shoveler, scaup, and coot; internationally important numbers of wintering Bewick's and whooper swans; nationally important numbers of breeding common tern; and, a population of pollan.</p>
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Assessment Criteria

Describe the individual elements of the Proposed Development (either alone or in combination with other plans or Proposed Developments) likely to give rise to impacts on the European site	<p>The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the Ramsar site or alter the habitats within its boundary. The substation and tower locations have been sited and designed to minimise all emissions to water resulting from the Tyrone – Cavan Interconnector.</p> <p>The Tyrone – Cavan Interconnector has been assessed for its water quality implications (surface and groundwater) where potential impacts are possible.</p> <p>Potential impacts on Ramsar site species features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights.</p>
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Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:

Size and scale	None of the works will take place within the Ramsar site.
Land-take	There will not be any land take from the Ramsar site.
Distance from the European site or key features of the site	<p>The Tyrone – Cavan Interconnector is approximately 4km to the south of the Ramsar Site. A ~5km hydrological link exists via the River Blackwater to the edge of the Ramsar site. One of the key features of the site is mobile species: whooper swan, which may use the Ramsar Site as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop. The nearest known wintering site for swans is at Edenderry Lough, 1km to the west of the proposed line, although this has been rarely, if at all, used in the past five years. Birds wintering in the Blackwater River valley use sites ~4km to the west of the line and Derryscollop is 3km to the east. Swans have been seen feeding during times of flooding near overhead lines at Clonbeg, 1km from the Tyrone – Cavan Interconnector.</p>
Resource requirements (water abstraction etc)	No abstraction will take place as a result of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	<p>Potential impacts to the Ramsar site have been minimised through appropriate tower and substation siting. There will be localised excavation for tower bases, remote from the Ramsar site. Excavations for the substation will be extensive, but also remote from the site.</p>

Screening Matrix: Lough Neagh and Lough Beg Ramsar Site

	Potential sources of emissions are silt, discharges from dewatering of the excavations required for tower foundations and small-scale hydrocarbon leaks from plant. There is a ~5km hydrological link to the Ramsar via the slow moving, local drainage network and the River Blackwater. There is a ~13 km hydrological link to the Ramsar from the crossing point of the River Blackwater. In the unlikely event that any sediment would reach the River Blackwater either directly or via local drains, (especially from the closest situated towers of 32 and 33) it would quickly settle out downstream from its entry point on the journey towards Lough Neagh. The likely volumes of sediment in such a potential situation would be minimal when compared to the suspended sediments during a flood.
Excavation requirements	There will be localised excavation for tower bases, remote from the site. Excavations for the substation will be extensive, but also remote from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc.	The Tyrone – Cavan Interconnector will take 3 years to complete. SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project will be decommissioned the method and impacts will be the same or less than the construction phase of the project. Further details are provided in Section 2 of this report.
Other	None
Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the Ramsar site.
Disturbance to key species	The Tyrone – Cavan Interconnector will not lead to the disturbance of any of the key species either during the construction or operational phase. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential number of whooper swan collisions with the overhead line would be minimal and it would be considered that no likely significant effects on the whooper swan population would occur.
Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
Reduction in species density	Based on the lack of opportunities for disturbance described above, it is considered that there would be no reduction in species density of qualifying features.
Changes in key indicators of conservation value (water quality etc.)	It is considered that there would be no changes to the key indicators of conservation value. As described above, given the nature of the hydrological link, it is considered that sediment from the construction phase, would not pass into local watercourses and proceed to Lough Neagh, to impact its water quality.
Climate change	The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts. The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.

Screening Matrix: Lough Neagh and Lough Beg Ramsar Site

Describe any likely impacts on the European site as a whole in terms of:

<p>Interference with the key relationships that define the structure of the site;</p> <p>Interference with key relationships that define the function of the site.</p>	<p>Whooper swans that may use the site and are part of the designation population may cross the route of the proposed overhead line to wintering grounds in the Blackwater River valley and areas further south. Birds using the valley are generally site-faithful and are at low risk of collision with the line. Assessment indicates that the Tyrone – Cavan Interconnector will not impact the key relationships that define the structure or function of the site. A series of wintering bird surveys monitored the movements of birds within the Blackwater Valley and concluded that the overhead line will not present a collision risk to this local population due to the lack of regular flightlines (occasional flights were noted during surveys only) over the proposed alignment. The Consolidated Environmental Statement (2013) provides greater detail on these local populations.</p>
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the Ramsar area and does not involve any land take of the site.
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Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of relevant habitats or populations.
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Disruption	The implementation of the Tyrone – Cavan Interconnector, will not cause any significant disruption to relevant habitats within the Ramsar site or its mobile populations, especially swans, given the orientation and low collision risks already presented.
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Disturbance	As a result of the implementation of the Tyrone – Cavan Interconnector, significant disturbance to relevant habitats within the Ramsar site or mobile populations again are unlikely given the orientation and low collision risks already presented.
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Change to key elements of the site	None.
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Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	<p>The main element of potential concern, with regard to the qualifying features of the site, is the collision risk for wintering swans that use the site for at least part of the winter. Some of the whooper swans that winter in the general vicinity of the Tyrone – Cavan Interconnector (Blackwater River valley, Derryscollop, Keady Lakes) may overfly the proposed overhead line route, however no regular flightlines have been identified. Individual birds may be at risk of collision, but this potential impact is considered de minimis in terms of the overall population and result in no significant effects.</p>
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Similarly, without mitigation measures, given the nature and scale of the construction works involved, the potential likelihood of sediment emissions reaching Lough Neagh given the hydrological link, and impacting on the water quality of Lough Neagh would be de minimis and result in no likely significant effects.

In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effects on the qualifying features of Lough Neagh and Lough Beg Ramsar site and its conservation objectives. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Table 4.4: Screening Matrix - Lough Foyle SPA.**Habitats Directive Draft Screening Matrix: Lough Foyle SPA**

Brief Description of the European Site	Lough Foyle lies on the north-west coast of Northern Ireland and straddles the international border with the Irish Republic. The site comprises a large, shallow sea lough that includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal mud-flats and sand-flats (with blue mussel beds), saltmarsh and associated brackish ditches. The diversity of coastal habitats has resulted in the lough being of major importance for a diverse assemblage of waterbirds both during the spring and autumn migration periods, and in winter. These include swans, geese, ducks and waders. The lough is especially notable in supporting a high proportion of the international population of Canada/Ireland light-bellied brent goose. Internationally important numbers of whooper swan, bar-tailed godwit, light-bellied brent goose. Nationally important numbers of a further 20 waterfowl species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland.
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Assessment Criteria

Describe the individual elements of the Proposed Development (either alone or in combination with other plans or Proposed Developments) likely to give rise to impacts on the European site	The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the European site or alter the habitats within its boundary. The potential for likely significant effects on the Lough waters, 69km to the north west, can be excluded on the basis of its hydrological isolation. Potential impacts on SPA qualifying features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights.
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Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:

Size and scale	None of the works will take place within the SPA boundary.
Land-take	There will not be any land take from the SPA site.
Distance from the European site or key features of the site	The Tyrone – Cavan Interconnector is approximately 69km to the south east of the SPA. Whooper swans which may use the SPA as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop, although from survey and consultation these numbers are considered low.
Resource requirements (water abstraction etc.)	No abstraction is planned as part of the construction or operation of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	There will be localised excavation for tower bases, remote (69km) and hydrologically isolated from the site. Excavations for the substation will be extensive, but also remote (69km) and hydrologically isolated from the site.
Excavation requirements	There will be localised excavation for tower bases, remote from the site. Excavations for the substation will be extensive, but also remote and hydrologically isolated from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc.	The Tyrone – Cavan Interconnector will take 3 years to construct. SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project will be decommissioned the method and impacts will be the same or less than the construction phase of the project. Further details are provided in Section 2 of this report.
Other	None.

Habitats Directive Draft Screening Matrix: Lough Foyle SPA

Describe any likely changes to the site arising as a result of:

Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the SPA site.
Disturbance to key species	The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential for whooper swan collisions with the overhead line would be unlikely.
Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
Reduction in species density	It is considered based on the orientation of the line and the low likelihood of collisions as described above, that there would be no reduction in species density combined with no disturbance to the qualifying features.
Changes in key indicators of conservation value (water quality etc.)	It is considered that there would be no changes to the key indicators of conservation value due to the hydrological isolation and no disturbance or disruption to the mobile features as described above.
Climate change	The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts. The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.

Describe any likely impacts on the European site as a whole in terms of: Interference with the key relationships that define the structure of the site; Interference with the key relationships that define the function of the site	Whooper swans that may use the site and are part of the SPA population may cross the route of the proposed overhead line to wintering grounds further south. However, this site is remote to the north west of the Tyrone – Cavan Interconnector, as are the traditional wintering grounds to the south west of the Tyrone – Cavan Interconnector (i.e. Lough Oughter Complex) or to the north of the Tyrone – Cavan Interconnector (Lough Neagh and Lough Beg SPA and Ramsar). The birds are generally site-faithful and are at low risk of collision with the line. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that potential whooper swan collisions with the overhead line would be unlikely.
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the SPA area and does not involve any land take.
Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of habitats.
Disruption	It is expected that the numbers of whooper swan collisions with the overhead line will be minimal based on survey results and consultation. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that potential of whooper swan collisions with the overhead line would be unlikely and that likely significant effects on the whooper swan population can be excluded.
Disturbance	For the same reasons as above with disruption, it is considered that there would be no disturbance to the SPA site as a result of the Tyrone – Cavan Interconnector.
Change to key elements of the site	There will be no change to the key elements of the site.

Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	In relation to Lough Foyle SPA, the only element of potential concern with regard to the qualifying features of the site is the collision risk for wintering swans that use the site for at least part of the winter. Some of the birds that winter in the general vicinity of the Tyrone – Cavan Interconnector may overfly the proposed overhead line route. Individual birds may be at risk of collision. However, this site is remote to the north west of the Tyrone – Cavan Interconnector, as are traditional wintering grounds to the south west of the Tyrone – Cavan Interconnector (i.e. Lough Oughter Complex) or to the north
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Habitats Directive Draft Screening Matrix: Lough Foyle SPA

of the Tyrone – Cavan Interconnector (Lough Neagh and Lough Beg SPA and Ramsar).

The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be de minimis and this potential impact is considered de minimis in terms of the overall population and result in no significant effects.

In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effect on the qualifying features of Lough Foyle SPA and its conservation objectives. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Table 4.5: Screening Matrix - Lough Foyle Ramsar.**Habitats Directive Screening Matrix: Lough Foyle Ramsar**

Brief Description of the European Site	<p>Lough Foyle lies on the north-west coast of Northern Ireland and straddles the international border with the Irish Republic. Its boundary is coincident with that of Lough Foyle SPA. The site comprises a large, shallow sea lough that includes the estuaries of the rivers Foyle, Faughan and Roe. The site contains extensive intertidal mud-flats and sand-flats (with blue mussel beds), saltmarsh and associated brackish ditches. The diversity of coastal habitats has resulted in the lough being of major importance for a diverse assemblage of waterbirds both during the spring and autumn migration periods, and in winter. These include swans, geese, ducks and waders. The lough is especially notable in supporting a high proportion of the international population of Canada/Ireland light-bellied brent goose.</p> <p>Internationally important numbers of whooper swan, bar-tailed godwit, light-bellied brent goose. Nationally important numbers of a further 20 waterfowl species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland.</p>
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Assessment Criteria

Describe the individual elements of the Proposed Development (either alone or in combination with other plans or Proposed Developments) likely to give rise to impacts on the European site	<p>The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the European site or alter the habitats within its boundary. The potential for likely significant effects on the Lough waters, 69km to the north west, can be excluded on the basis of its hydrological isolation. Potential impacts on Ramsar qualifying features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights.</p>
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Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:

Size and scale	None of the works will take place within the Ramsar boundary.
Land-take	There will not be any land take from the Ramsar site.
Distance from the European site or key features of the site	The Tyrone – Cavan Interconnector is approximately 69km to the south east of the Ramsar. Whooper swans which may use the Ramsar as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop, although from survey and consultation these numbers are considered low.
Resource requirements (water abstraction etc)	No abstraction is planned for the construction or operation of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	In all cases the potential for emissions to water during construction has been examined and considered very unlikely. In all cases, the potential of likely significant effects arising from the emission of sediments into the local watercourses and onward to Lough Foyle, can be excluded as there are no hydrological connections between the Tyrone – Cavan Interconnector and Foyle catchment.
Excavation requirements	There will be localised excavation for tower bases, remote and hydrologically isolated from the site. Excavations for the substation will be extensive, but also remote and hydrologically isolated from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc.	<p>The Tyrone – Cavan Interconnector will take 3 years to complete.</p> <p>SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project will be decommissioned the method and impacts will be</p>

Habitats Directive Screening Matrix: Lough Foyle Ramsar

	the same or less than the construction phase of the project. Further details are provided in Section 2 of this report.
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Other	None.
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Describe any likely changes to the site arising as a result of:

Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the Ramsar site.
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Disturbance to key species	The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be unlikely.
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Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
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Reduction in species density	It is considered that there would be no reduction in species density as a result of the Tyrone – Cavan Interconnector.
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Changes in key indicators of conservation value (water quality etc)	No changes to the key indicators of conservation value are expected due to the hydrological isolation from the site.
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Climate change	<p>The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts.</p> <p>The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.</p>
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Describe any likely impacts on the European site as a whole in terms of: Interference with the key relationships that define the structure of the site; Interference with the key relationships that define the function of the site	Whooper swans that may use the site and are part of the Ramsar population may cross the route of the proposed overhead line to wintering grounds further south. However, this site is remote to the north west of the Tyrone – Cavan Interconnector, as are the traditional wintering grounds to the south west of the Tyrone – Cavan Interconnector (i.e. Lough Oughter Complex) or to the north of the Tyrone – Cavan Interconnector (Lough Neagh and Lough Beg SPA and Ramsar). The birds are generally site-faithful and are at low risk of collision with the line. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential impact of whooper swan collisions with the overhead line would be unlikely and result in no significant effects.
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the Ramsar area and does not involve any land take.
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Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of habitats.
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Disruption	It is expected that the numbers of whooper swan collisions with overhead line will be minimal based on survey results and consultation. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be unlikely and that likely significant effects on the whooper swan population can be excluded.
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Disturbance	For the same reasons as with disruption reported above and its hydrological isolation, it is considered that there would be no disturbance to the Ramsar site or its qualifying species as result of the Tyrone – Cavan Interconnector.
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Change to key elements of the site	There will be no change to the key elements of the site.
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Habitats Directive Screening Matrix: Lough Foyle Ramsar

Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known

The only element of potential concern with regard to the qualifying features of the site is the collision risk for wintering swans that use the site for at least part of the winter. Some of the birds that winter in the general vicinity of the Tyrone – Cavan Interconnector may overfly the proposed overhead line route. Individual birds may be at risk of collision. However, this site is remote to the north west of the Tyrone – Cavan Interconnector, as are the traditional wintering grounds to the south west of the Tyrone – Cavan Interconnector (i.e. Lough Oughter Complex) or to the north of the Tyrone – Cavan Interconnector (Lough Neagh and Lough Beg SPA and Ramsar).

The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be unlikely and result in no significant effects.

In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effects on the qualifying features of Lough Foyle Ramsar site and its conservation objectives. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Table 4.6: Screening Matrix - Lough Swilly SPA.

Habitats Directive Draft Screening Matrix: Lough Swilly SPA

Brief Description of the European Site	Lough Swilly SPA is a large coastal site located in north County Donegal. It is a long sea inlet, cut through a variety of metamorphic rocks and situated on the west side of the Inishowen Peninsula in north Co. Donegal. The SPA comprises the inner part of Lough Swilly from just east of Letterkenny northwards to Killygarvan (c. 2 km north of Rathmullan) on the west side and to c. 2 km south of Bunrana on the east side. It includes the estuaries of the River Swilly, the River Leannan and the Isle Burn and the predominant habitat is sand and mud flats which are extensive when exposed at low tide. Both 'estuaries', 'mudflats and sandflats not covered by water at low tide' are listed on Annex I of the EU Habitats Directive (92/43/EEC). The site supports internationally important numbers of whooper swan, Greenland white-fronted goose, greylag goose, nationally important numbers of a further 21 species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland.
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Assessment Criteria

Describe the individual elements of the Proposed Development (either alone or in combination with other plans or Proposed Developments) likely to give rise to impacts on the European site	The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the European site or alter the habitats within its boundary. The potential for any impacts and likely significant effects on the Lough waters, 78km to the north west, can be excluded based on its hydrological isolation from the site. Potential impacts on SPA site features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights.
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Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:

Size and scale	None of the works will take place within the SPA site.
Land-take	There will not be any land take from the SPA site.
Distance from the European site or key features of the site	The Tyrone – Cavan Interconnector is approximately 78km to the south east of the site. Whooper swans which may use the SPA as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop, both of which are located to the far north of the Tyrone – Cavan Interconnector.
Resource requirements (water abstraction etc.)	No abstraction will take place as a result of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	In all cases, the potential of likely significant effects arising from the emission of sediments into the local watercourses and onward to Lough Swilly, can be excluded based on the hydrological isolation from the site.
Excavation requirements	There will be localised excavation for tower bases, remote from the site. Excavations for the substation will be extensive, but also remote from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc	The Tyrone – Cavan Interconnector will take 3 years to complete. SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project will be decommissioned the method and impacts will be the same or less than the construction phase of the project. Further details are provided in Section 2 of this report.

Habitats Directive Draft Screening Matrix: Lough Swilly SPA

Other None

Describe any likely changes to the site arising as a result of:

Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the SPA site.
Disturbance to key species	The potential impact of whooper swan collisions with the overhead line is not considered significant due to its orientation, the location of feeding/staging sites within the locality and the low number of birds likely to be present in the airspace. This would indicate that the potential number of whooper swan collisions with the overhead line would be minimal and that likely significant effects on the whooper swan population can be excluded.
Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
Reduction in species density	Based on the lack of opportunities for disturbance as described above, there would be no reduction in species density to qualifying features.
Changes in key indicators of conservation value (water quality etc)	It is considered that there would be no changes to the key indicators of conservation value based on the hydrological isolation from the site and the lack of potential impacts to the qualifying features.
Climate change	The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts. The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.

Describe any likely impacts on the European site as a whole in terms of:

Interference with the key relationships that define the structure of the site; Interference with key relationships that define the function of the site	Individual whooper swans that may use the site and are part of the SPA population may cross the route of the proposed overhead line to wintering grounds in the Blackwater River valley and areas further south. Birds using the valley are generally site-faithful and are at low risk of collision with the line. A series of wintering bird surveys conducted over 3 years monitored the movements of birds within the Blackwater Valley and consultation indicated that only very low numbers of whooper swan may be at risk of collision. This site is remote to the north west of the Tyrone – Cavan Interconnector, as are the key wintering grounds to the south west of the Tyrone – Cavan Interconnector (i.e. Lough Oughter Complex) or are situated to the north of the Tyrone – Cavan Interconnector (Lough Neagh and Lough Beg SPA and Ramsar). The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be unlikely and that likely significant effects on the whooper swan population can be excluded.
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the SPA area and does not involve any land take of the site.
Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of relevant habitats or populations.
Disruption	The collision of whooper swan with the overhead line is not considered significant due to its orientation, the location of feeding/staging sites within the locality and the number of birds likely to be present in the airspace.

Habitats Directive Draft Screening Matrix: Lough Swilly SPA

Disturbance	As a result of the implementation of the Tyrone – Cavan Interconnector, significant disturbance to relevant habitats or populations within the SPA site will not occur due to the distance of the Tyrone – Cavan Interconnector.
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Change to key elements of the site. None.

Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	The only element of potential concern with regard to the qualifying features of the site is the collision risk for wintering swans that use the site for at least part of the winter. Some of the birds that winter in the general vicinity of the Tyrone – Cavan Interconnector may overfly the proposed overhead line route however no regular flightlines have been identified. Individual birds may be at risk of collision, but this potential impact is considered de minimis in terms of the overall population and result in no significant effects.
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In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effects on the qualifying features of Lough Swilly site and its conservation objectives. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Table 4.7: Screening Matrix: Lough Oughter Complex SPA.**Habitats Directive Draft Screening Matrix – Lough Oughter Complex SPA**

Brief Description of the European Site	Lough Oughter and its associated loughs occupy much of the lowland drumlin belt in north and central Co. Cavan between Belturbet, Killashandra and Cavan town. This area comprises a maze of waterways, islands, small lakes and peninsulas. Lough Oughter, the largest lake in the site, is relatively shallow (maximum depth of 10 m) and considered to be a naturally eutrophic system. Its main inflowing rivers are the River Erne and the Annalee River, whilst the main outflow is the River Erne, which connects the lake to Upper Lough Erne and Lower Lough Erne to the north.
Assessment Criteria	
Describe the individual elements of the Proposed Development (either alone or in combination with other plans or Proposed Developments) likely to give rise to impacts on the European site	The construction, operation and eventual decommissioning (if required) of the Tyrone – Cavan Interconnector will not impact the European site or alter the habitats within its boundary. The potential for any impacts or any likely significant effects on the Lough waters, 43 km to the south west, and hydrologically isolated can be excluded. Potential impacts on SPA site qualifying features would be confined to the collision risk for birds that use the site as a wintering or staging area, and which may cross the proposed overhead line route on migration or commuting flights. A series of wintering bird surveys monitored the movements of birds within the Blackwater Valley and concluded that the overhead line does not present a likely significant effect to the whooper swans population in the valley.
Describe any likely direct, indirect or secondary impacts of the Proposed Development (either alone or in combination with other plans or Proposed Developments) on the European site by virtue of:	
Size and scale	None of the works will take place within the SPA.
Land-take	There will not be any land take from the SPA.
Distance from the European site or key features of the site	The Tyrone – Cavan Interconnector is approximately 43km to the north east of the SPA. Whooper swans which may use the SPA as a wintering/staging area may also frequent the Blackwater River valley and a site at Derryscollop as well as traveling to sites north and west of the development. The nearest known wintering site for swans is at Edenderry Lough, 1km to the west of the proposed line, although this has been rarely, if at all, used in the past five years. Birds wintering in the Blackwater River valley use sites ~4km to the west of the line and Derryscollop is 3km to the east. Swans have been seen feeding during times of flooding near overhead lines at Clonbeg, 1km from the Tyrone – Cavan Interconnector.
Resource requirements (water abstraction etc)	No abstraction will take place as a result of the Tyrone – Cavan Interconnector.
Emissions (disposal to land, water or air)	In all cases, the potential of likely significant effects arising from the emission of sediments into the local watercourses and onward to The Lough Oughter Complex, can be excluded on the basis of the hydrological isolation from the site.
Excavation requirements	There will be localised excavation for tower bases, remote from the site. Excavations for the substation will be extensive, but also remote and hydrologically isolated from the site.
Transportation requirements	Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc	The Tyrone – Cavan Interconnector will take 3 years to complete. SONI and NIE, view the Tyrone – Cavan Interconnector as permanent transmission infrastructure. Following construction, its ongoing operation will be facilitated by routine maintenance, refurbishment and replacement of redundant equipment. Accordingly, there are no plans

Habitats Directive Draft Screening Matrix – Lough Oughter Complex SPA

	for the decommissioning of the overhead line, towers or substation. In the unlikely event that the project will be decommissioned the method and impacts will be the same or less than the construction phase of the project. Further details are provided in Section 2 of this report.
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Other	None
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Describe any likely changes to the site arising as a result of:

Reduction in habitat area	The Tyrone – Cavan Interconnector will not lead to any reduction in habitat areas in the SPA site.
Disturbance to key species	The potential impact of whooper swan collisions with the overhead line is not considered significant due to its orientation, the location of feeding/staging sites within the locality and the number of birds likely to be present in the airspace. This would indicate that the potential number of whooper swan collisions with the overhead line would be minimal and that likely significant effects on the whooper swan population can be excluded.
Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Tyrone – Cavan Interconnector.
Reduction in species density	Based on the lack of opportunities to impact the qualifying features as described above, there would be no reduction in species density to those qualifying features.
Changes in key indicators of conservation value (water quality etc)	It is considered that there would be no changes to the key indicators of conservation value based on the hydrological isolation from the site and the lack of impact on mobile species as described above.
Climate change	The Tyrone – Cavan Interconnector will not have likely adverse significant effects in terms of contributing to climate change and it is unlikely to be significantly affected by climate change impacts. The Tyrone – Cavan Interconnector will facilitate the connection of the renewable energy sector on the island of Ireland and so will facilitate a beneficial impact in terms of climate change.

Describe any likely impacts on the European site as a whole in terms of:

Interference with the key relationships that define the structure of the site; Interference with key relationships that define the function of the site.	Whooper swans that may use the site and are part of the designation population may cross the route of the proposed overhead line to wintering grounds in the Blackwater River valley and areas further south. Birds using the valley are generally site-faithful and are at low risk of collision with the line. A series of wintering bird surveys conducted over 3 years monitored the movements of birds within the Blackwater Valley and found that the Tyrone – Cavan Interconnector is not considered to have likely significant effects on the SPA. A series of wintering bird surveys monitored the movements of birds within the Blackwater Valley and concluded that the overhead line does not present a likely significant effect to the whooper swans population in the valley.
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Provide indicators of significance as a result of the identification of effects set out above in terms of:

Loss	The Tyrone – Cavan Interconnector will not lead to a loss of any of the SPA area and does not involve any land take of the site.
Fragmentation	The Tyrone – Cavan Interconnector will not result in any fragmentation of relevant habitats or populations.
Disruption	It is expected that the numbers of whooper swan collisions with overhead line will be minimal based on survey results and consultation. The orientation and location of the Tyrone – Cavan Interconnector and the small numbers of whooper swans recorded in the airspace of the Tyrone – Cavan Interconnector would indicate that the potential of whooper swan collisions with the overhead line would be unlikely and

Habitats Directive Draft Screening Matrix – Lough Oughter Complex SPA

	that likely significant effects on the whooper swan population can be excluded.
Disturbance	As with disruption (above) conceivable disturbance of relevant habitats or populations within the SPA site can be excluded as a result of the implementation of the Tyrone – Cavan Interconnector.
Change to key elements of the site	None.
Describe from the above those elements of the Proposed Development or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known	<p>Some of the birds that winter in the general vicinity of the Tyrone – Cavan Interconnector (Blackwater River valley, Derryscollop, Keady Lakes) may overfly the proposed overhead line route however no regular flightlines have been identified. Individual birds may be at risk of collision, but this potential impact is considered de minimis in terms of the overall population and result in no significant effects.</p> <p>In accordance with the Habitats Directive (92/43/EEC), the likely effects from the Tyrone – Cavan Interconnector have been assessed and it is considered that based on the likelihood and magnitude of impacts from the construction or operation would cause no significant effects on the qualifying features of Lough Oughter Complex SPA and its conservation objectives. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.</p>

Table 4.8: Data considered in the Screening Assessment

Who carried out the assessment?	Sources of data	Level of assessment completed	Where can the full results of the assessment be accessed and viewed?
SONI and its consultants ¹⁰	<p>JNCC Site Descriptions for UK Sites</p> <p>NPWS for Sites located in Ireland</p> <p>Reports prepared as part of the EIA of the Tyrone - Cavan Interconnector.</p>	Screening	This assessment will be published as part of the 2019 Addendum.

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 Dr. Eleanor Ballard, CEnv MCIEEM
 Dr Paul Lynas BSc(Hons) MRes CEnv MCIEEM

4.3 Conclusions of Stage 1 Screening

A hydrological connection has been identified between the Proposed Development and Lough Neagh & Lough Beg SPA and Ramsar sites. This link (at its closest point) of approximately 5km to the Ramsar site and 11km to the SPA has the potential to convey sediment from the Proposed Development during its construction to the designations. However, given the distances involved via several watercourses (as described), any such sediments would settle out well before reaching the designations. This would result in a de minimis impact and a conclusion of no significant effects to the qualifying features of the designations. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

Furthermore, it is considered that, without mitigation, the risk of impacts on mobile species of whooper swans, associated with Lough Neagh & Lough Beg SPA and Ramsar sites, Lough Foyle SPA, Lough Foyle Ramsar Site, Lough Swilly SPA and Lough Oughter Complex SPA would also be de minimis and result in no significant effects. However, the assessment proceeds to a Stage 2 Appropriate Assessment, where mitigation will be proposed as a precaution.

5. Information to Inform Appropriate Assessment

5.1 Regulatory Context

The purpose of the Appropriate Assessment is to assess the implications of the Tyrone - Cavan Interconnector in respect of the sites' conservation objectives, individually or in combination with other plans and projects. The conclusions should enable the Competent Authority to determine whether the Tyrone - Cavan Interconnector would adversely affect the integrity of any European sites. The purpose of the Screening process was to identify European sites on which there is the possibility of there being a significant effect from the Tyrone - Cavan Interconnector. The Screening process identified six European sites where the potential for likely significant effects were considered de minimis. However, given the precautionary approach enshrined within the primary legislation and the need for a vigorous approach to any assessment, mitigation is proposed out of an abundance of caution. As such, these sites can now be examined in detail in view of their conservation objective to maintain or restore the favourable conservation status of whooper swan and water quality that supports the habitats of sites. Information is presented to allow an assessment on the integrity of the following European sites in view of their conservation objectives:

- Lough Neagh and Lough Beg SPA;
- Lough Neagh and Lough Beg Ramsar;
- Lough Oughter Complex SPA (Ireland);
- Lough Foyle SPA;
- Lough Foyle Ramsar; and,
- Lough Swilly SPA (Ireland).

5.2 Site Conservation Objectives Overview

The conservation objectives for individual sites focus on protection of the site qualifying features and any supporting site characteristics that are important for the conservation of those features. In general, objectives for European sites call for the maintenance or restoration of qualifying features in favourable condition, together with expansion of feature habitats and species populations where appropriate. The conservation objectives for European sites which are SPAs focus on protection of the site qualifying features and any supporting site characteristics that are important for the conservation of those features. Objectives call for the maintenance of qualifying features in favourable condition. Conservation objectives of European sites considered fully in this assessment are presented in Annex A. Ramsar sites are generally coincident with SPA site boundaries (Lough Neagh and Lough Beg are not, along their southern boundaries) and as such the conservation objectives for these sites also apply to the Ramsar designation.

5.3 Impacts and Threats to Northern Ireland Protected Sites

The diverse nature of European Sites in terms of locations and reasons for designation means that threats to qualifying features are also likely to be diverse. The main impacts and threats affecting the habitat qualifying features of sites, as identified by JNCC (2007), include a range of direct and indirect impacts. JNCC guidance (www.jncc.defra.gov.uk) requires all features of European importance (both primary and non-primary) to be considered when undertaking an HRA with regard to a site. The global conservation status of each designation feature is indicated for Northern Ireland, provided by NIEA (2013). As the Tyrone – Cavan Interconnector does not pass through or over any European sites, only indirect impacts are considered i.e. those activities that may impact mobile species (whooper swans) and those that, may affect the sites' water quality. Impacts on the air quality of designated sites were considered as part of the overall environmental assessment and no impacts were identified (Chapter 13 Air Quality and Climate of the 2019 Addendum).

Table 5.1 summarises the European sites' Designation Feature(s), the approximate distance from the Tyrone – Cavan Interconnector, and a brief Description of the Designation feature including, for SPA sites, the conservation objectives.

Table 5.1: European sites under consideration

Site	Designation feature(s)	Distance from the Tyrone – Cavan Interconnector	Feature Description
Lough Neagh and Lough Beg SPA	Breeding common tern; Breeding bird assemblage; Wintering Bewick’s swan, whooper swan (Annex I species); Wintering waterfowl assemblage; and Regularly supports >20,000 waterfowl.	8 km to the closest point of the Tyrone – Cavan Interconnector	During the breeding season the area regularly supports nationally important numbers of breeding common tern, and a nationally important assemblage of waterfowl. Over winter the area regularly supports internationally important numbers of Bewick’s swan, whooper swan, pochard, tufted duck and goldeneye and nationally important numbers of 13 additional species of waterfowl. Over winter the area regularly supports 99,262 waterfowl. The <u>Conservation Objectives</u> for this site are: <i>To maintain each feature in favourable condition.</i>
Lough Neagh and Lough Beg Ramsar	A particularly good representative example of natural or near-natural wetlands, common to more than one biogeographic region. Regularly supports internationally important numbers of wildfowl species and regularly supports nationally important numbers of breeding common tern. Supports an important assemblage of breeding birds. Supports a population of pollan.	4km to the closest point of the Tyrone – Cavan Interconnector	This site is the largest freshwater lake in the United Kingdom. Lough Neagh is a relatively shallow body of water supporting beds of submerged aquatic vegetation fringed by associated species-rich damp grassland, reedbeds, islands, fens, marginal swampy woodland and pasture. Other interesting vegetation types include those associated with pockets of cut-over bog, basalt rock outcrops and boulders, and the mobile sandy shore. Over winter the area regularly supports internationally important numbers of Bewick’s and whooper swans. During the breeding season the area regularly supports nationally important numbers of breeding common tern. Supports nationally important numbers of breeding great crested grebe, gadwall, pochard, tufted duck, snipe and redshank. One of the few locations in Ireland and one of the two known locations in the UK for pollan.

Site	Designation feature(s)	Distance from the Tyrone – Cavan Interconnector	Feature Description
Lough Oughter Complex SPA (Ireland)	Wintering whooper swan (Annex I species), wigeon; Breeding great crested grebe; and Wetland and waterbirds.	35km to closest point of Tyrone – Cavan Interconnector	Internationally important numbers of whooper swan, nationally important numbers of wigeon, great crested grebe. The <u>Conservation Objectives</u> for this site are <i>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</i>
Lough Foyle SPA	Wintering, whooper swan, bar-tailed godwit (Annex I species), light-bellied brent goose; Wintering waterfowl assemblage; and Regularly supports >20,000 waterfowl.	69km to closest point of Tyrone – Cavan Interconnector	Internationally important numbers of whooper swan, bar-tailed godwit, light-bellied brent goose. Nationally important numbers of a further 20 waterfowl species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland. The <u>Conservation Objectives</u> for this site are: <i>To maintain each feature in favourable condition.</i>
Lough Foyle Ramsar	Criterion 1a of the Ramsar Convention by being a particularly good representative example of a wetland. Criterion 1c by being a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position.	69km to closest point of Tyrone – Cavan Interconnector	Internationally important numbers of whooper swan, bar-tailed godwit, light-bellied brent goose. Nationally important numbers of a further 20 waterfowl species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland. The <u>Conservation Objectives</u> for this site are: <i>To maintain each feature in favourable condition.</i>

Site	Designation feature(s)	Distance from the Tyrone – Cavan Interconnector	Feature Description
	<p>Criterion 3a by supporting over 20,000 waterfowl.</p> <p>Criterion 3b by regularly supporting substantial numbers of individuals from particular groups of waterfowl which are indicative of wetland values, productivity, and diversity.</p> <p>Criterion 3c by regularly supporting internationally important numbers of whooper swan.</p>		
Lough Swilly SPA (Ireland)	<p>Wintering, whooper swan, Greenland white-fronted goose (Annex I species) and greylag goose;</p> <p>Wintering waterfowl assemblage; and</p> <p>Regularly supports >20,000 waterfowl.</p>	78km to closest point of Tyrone – Cavan Interconnector	<p>Internationally important numbers of whooper swan, Greenland white-fronted goose, greylag goose, nationally important numbers of a further 21 species. The site acts as a staging post for, particularly, whooper swans before dispersal into Northern Ireland and Ireland.</p> <p>The <u>Conservation Objectives</u> for this site are:</p> <p><i>To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Lough Swilly SPA, which is defined by the following list of attributes and targets (note that this objective relates to all waterbird species of Special Conservation Interest).</i></p>

This Section of the report presents the information to inform an Appropriate Assessment. It uses the baseline condition assessments and considers the pressures and threats to European site qualifying features and assesses the potential impacts of the Tyrone – Cavan Interconnector (however unlikely to occur) and how these relate to overall site integrity.

5.4 Underlying Trends Affecting Protected Sites

The trends affecting European sites are presented in terms of the condition of qualifying features. EC Member States must report at six-yearly intervals on measures taken and their outcome in terms of the conservation status of species and habitats listed on the Directive's Annexes. The latest reporting round for the Habitats Directive covered the period 2001-2006 (Williams ed. 2006). For the UK as a whole, the 2001-2006 reporting round found that 37% of assessments recorded favourable condition, 24% unfavourable-recovering and 38% other unfavourable. The degree of uncertainty applicable to the results recorded in this document has been assessed by NIEA, which has adopted a risk-based approach to assessment. Risk is defined as 'the risk to habitats and species of being adversely affected by pressures caused by human activities' (NIEA 2010).

As highly mobile species, bird populations may be affected by factors not only in Northern Ireland, but also by those on their wintering or breeding grounds elsewhere, or along the routes between Northern Ireland and those breeding or wintering grounds. For those species that breed in northern and eastern regions of the Eurasian land mass and winter in Northern Ireland, there may be a 'short stopping' response to recent milder winter conditions on the near continent. This is particularly the case with some duck and wader species that are components of bird assemblage features of SPAs. Some wintering species, for example Bewick's swan, also appear to have reduced breeding success on their continental breeding grounds, which may also be a factor in reduced numbers in Northern Ireland. In general, there has been a decline in the numbers of wintering ducks derived from breeding populations in eastern Europe and Siberia, whilst wildfowl of Icelandic origin are generally stable (scaup) or increasing (whooper swan).

Unfavourable condition for the site features is attributed to:

- Lough Foyle – Population decline of Bewick's swan is part of a wider European pattern and is unlikely to be site-specific; and,
- Lough Neagh and Lough Beg – Decline of great crested grebe is a possible artefact of variable monitoring reliability and is contrary to national trend (Baillie et al 2012). For Bewick's swan see above. Declines of pochard and tufted duck may result from changes in migration patterns. Unfavourable condition of the waterfowl assemblage is the result of associated declines in these two species.

The qualifying features of European sites may be in favourable or unfavourable condition, but management of these internationally important sites is designed to produce universally favourable condition at some point in the future, in line with site conservation objectives. The Tyrone – Cavan Interconnector will not contribute to, or cause, the unfavourable condition of these qualifying features, and will be neutral in its effects on the condition of the features.

5.5 Mitigation

Mitigation measures include actions that will lead to avoidance of potential impacts on European sites, their conservation objectives and their qualifying features (see Consolidated ES (2013) for proposed standard mitigation measures – an outline is provided in this report and the Outline CEMP is unchanged from that presented in the Consolidated ES Addendum (2015).

Since the publication of the Consolidated ES, bird flight diverters on an additional length of the overhead line (i.e. between Towers 1 -13 and Towers 30 -43), have also been proposed. Thus, bird flight diverters which have been shown in the scientific research to significantly reduce possible collisions will be installed from Towers 1- 13 and Towers 30 to 43.

The project level mitigation measures outlined in the Consolidated ES are considered to be “best practice” (e.g. CIRIA guidance has been applied) and are measures which have been routinely and successfully applied for other projects.

The precautionary mitigation measures at the northern end of the scheme (bird flight diverters between Towers 1 to 13 and Towers 30 to 43) will further reduce the potential for collisions by whooper swans with the overhead line. It is considered that the potential for collisions post mitigation, is such as to remove such potential beyond doubt and certainly not enough to approach the adverse effects at the population level which have been modelled to require annual removal of greater than 3% of a population of whooper swans (Trinder, 2012).

As best practice, post construction monitoring is also proposed. The overhead line will be monitored for collision casualties post-construction, and modifications to diverter type and location arising from monitoring observations will be put in place if required. Monitoring is included as best practice only.

A watching brief will be kept and modifications made to maintain or enhance its effectiveness.

- Regular post construction survey to identify collision cadavers along the overhead line route.
- Encouragement of local landowners to report casualties.

5.6 Impacts to Mobile Species Moving Between Designated Sites

Potential effects on the integrity of designated sites arising from the Tyrone – Cavan Interconnector and its extension into Ireland would be restricted to a potential to increase collision mortality of whooper swan (a designated feature of the assessed sites). This species has poor manoeuvrability and forward vision, increasing its vulnerability to poorly marked flight obstacles, yet travels long distances. Birds frequently make twice-daily flights between feeding and roosting sites in very low light conditions, which could lead to an increased collision risk where overhead lines are present. However, it should be noted that large numbers of swans from the Lough Neagh population forage in the immediate vicinity of such existing lines and their associated towers in other areas, not associated with the Tyrone - Cavan Interconnector with apparently no significant effects. In fact, the whooper swan population is increasing (Trinder, 2012). Commuting flights of this nature are unlikely to occur along the length of the Tyrone – Cavan Interconnector in Northern Ireland, because known traditional foraging grounds and their associated roost sites in the vicinity are either on the same side of the line, and therefore do not require transits across the line route, or flightlines are oriented so that they pass beyond the northern end of the Tyrone – Cavan Interconnector.

Wintering bird surveys have been completed for the Tyrone – Cavan Interconnector for approximately 10 years. This depth of survey data has been used to draw the conclusions of this assessment. There is no evidence of wintering birds crossing the line but diverters will be provided in two areas following consultation with the Natural Environment Division – NIEA. Monitoring of the diverters will be completed on a yearly basis to ensure their efficacy.

There is a potential collision risk for wintering swans that use feeding sites on both sides of the border. However, the numbers using the Blackwater catchment in Ireland are generally restricted to 20-40 birds (Crowe, 2005), and birds using the lakes of south Armagh are also generally present in very small numbers. However, sightings of marked birds confirm that birds that use the Keady lakes may spend part of each winter in the Lough Foyle and Lough Swilly SPA and are therefore part of the designation feature for those sites. They may also use sites in Ireland during the same winter (see Consolidated ES (2013)). The impact on swans that may use sites on both sides of the border is seen to be negligible in terms of adverse effects upon the integrity of the designated sites.

However, it is likely that non-regular flights will take place across the Tyrone – Cavan Interconnector route, with an increased potential for collision limited to birds making those flights. As well as commuting trips as described above, whooper swans also make longer distance movements between breeding quarters or migration staging areas and their final wintering grounds. There is a potential for birds moving between Lough Neagh and wintering sites in Ireland to cross the line of the Tyrone – Cavan Interconnector, particularly towards the northern end of the line. In this respect, birds that may make a direct flight between Lough Neagh and the Lough Oughter Complex SPA will cross the northern part of the interconnector route. However, birds that may use this route already cross an existing 275kV line

to the north of Moy that is roughly perpendicular to this flight path. There is no evidence that the existing line presents a significant obstacle to birds in this area. Alternative, more direct, and perhaps more frequently used, flightlines may originate from putative staging areas around Lough Erne, or directly from arrival points on the north coast (Lough Swilly and Lough Foyle). These routes would avoid the Tyrone – Cavan Interconnector route altogether.

The most effective means of mitigation is through avoidance of impacts. None of the sites that support whooper swans regularly are in the immediate vicinity of the Tyrone – Cavan Interconnector, and the development also avoids wintering grounds that are used by the species following their Autumn/early Winter departure from the designated sites. The proposed overhead line will be located to the west of both foraging and roost sites in the Blackwater River valley in Northern Ireland, and there will be no potential for regular flights to take place across the line of the interconnector. The interconnector will also avoid impacts on birds wintering around Keady, where birds use the local lakes for both feeding and roosting.

There is potential that whooper swans undertaking longer distance flights, for example from staging sites at Loughs Foyle, Swilly and Neagh, may cross the line of the Tyrone – Cavan Interconnector as they move onward into winter quarters to the south, for example in the vicinity of Lough Oughter. The relative locations of these sites with respect to that of the Tyrone – Cavan Interconnector suggest that the most likely part of the overhead line to be crossed at this time is towards its northern end. Birds generally fly at higher altitudes on these migratory movements than during diurnal movements, but many fly within the altitude band occupied by the proposed overhead line (Pennycuick *et al.* 1996, Griffin *et al.* 2011). Between Towers 32 and 33 the line passes over the Blackwater River, and bird diverters will be fitted to the earth line (highest line) between Tower 30 and Tower 43. As a further safeguard, diverters are also to be erected on Towers 1 to 13. This area is assessed to be the most likely to attract birds, either who use the river as a leading line, or those that descend to ephemeral floods.

5.7 Mobile Qualifying Feature Species that Also Use Areas Outside the Boundaries of European Sites

Actions undertaken outside site boundaries may have the capacity to affect the integrity of the site feature, for example by reducing population levels as a result of increased mortality, disturbance of or exclusion from foraging areas. The Habitats Regulations provisions to prevent adverse impacts on site integrity would apply in this case to actions that have the potential to reduce the local distribution of European protected species. It is therefore recognised that maintenance of protected sites may require mitigation measures to be undertaken outside the boundaries of the sites.

Migrant bird species, particularly whooper swan, that are qualifying features of European sites arrive in Northern Ireland, generally on the north coast, from more northerly breeding areas. Many of these birds then move on through the country to traditional wintering sites in Northern Ireland and Ireland. Other birds move on to Great Britain from the island of Ireland. The majority of the birds that winter on the island of Ireland use the Lough Swilly, Lough Foyle and Lough Neagh/Beg SPAs at some point in the winter, and many move between these and other sites. They are thus part of the populations for which these sites are designated, and any impacts on the species from new infrastructure as they migrate to, from and through the island of Ireland must be considered as relevant constraints on development. The general scheme of movements through the island of Ireland is known and it is considered that the Tyrone – Cavan Interconnector (with incorporated mitigation) will not have any impact on the population of qualifying feature species, and therefore could not give rise to an adverse effect on the integrity of the European sites under consideration.

5.8 Lough Neagh and Lough Beg SPA and Ramsar sites

5.8.1 Whooper Swan

Lough Neagh is the nearest (approximately 4km to Ramsar site and 8km to SPA) significant major wintering ground/staging area that may be the immediate source of whooper swans that may cross the line of the Tyrone – Cavan Interconnector, and therefore may be at risk of collision with the overhead line. The area of the Ramsar and SPA sites are roughly similar but there are differences to the designated areas, hence the different distances quoted above. Of the wintering sites in the vicinity of the Tyrone – Cavan Interconnector, it is known that birds using ephemeral floods at Derryscollop may

be considered part of the greater Lough Neagh wintering population (Robinson *et al.*, 2004). Birds that winter at Derryscollop and at the Keady Lakes are likely to fly parallel with the overhead line, as they are due south of the SPA and Ramsar site, with a consequent low collision risk for birds undertaking this movement.

Birds that stage at Lough Neagh and then may move on to winter in the Blackwater River valley may also fly parallel to the proposed overhead line, but there is also a potential for birds to overfly the northern part of the interconnector route during onward or return movements from or to Lough Neagh. However, there is no indication that an existing overhead line immediately to the north of Turleenan either acts as a barrier to movement or is a significant collision risk to birds undertaking this movement. There is some indication that the site is also used as a staging area in spring, for birds returning to Iceland, with similar implications for swans passing in the vicinity of the proposed overhead line. The existing 275kV overhead line runs to the north west and south east of the proposed Turleenan substation. When it is considered together with the proposed project, no effect is likely.

Whooper swans that use the Blackwater River valley and the Keady lakes as winter quarters are generally site-faithful through particular winters, although some birds wander over considerable distances, and some change wintering areas between winters. However, these wintering populations may be regarded as discrete sub-populations (Robinson *et al.* 2004), and there is little risk of them coming into contact with the Tyrone – Cavan Interconnector. Compared with the total population on the island of Ireland of 12,700 whooper swans, the numbers using the Blackwater catchment in Ireland are generally restricted to 20-40 birds (Crowe 2005), and birds using the Keady lakes are generally present in very small numbers. However, sightings of marked birds confirm that birds that use the Keady lakes may spend part of each winter in the Lough Foyle and Lough Swilly SPAs and are therefore part of the designation feature for those sites. They may also use sites in Ireland during the same winter (see Consolidated ES).

Birds that winter to the south of the border (Ireland) after staging at Lough Neagh also have the potential to fly across the Tyrone – Cavan Interconnector towards its northern end. Again, there is no indication that the present overhead line at Turleenan is a significant collision risk for these birds, or when the two routes are considered together

Overhead line collision is the most frequently reported cause of death of swans in the United Kingdom (Brazil, 2003). Mortality from this cause may be concentrated where birds roost and forage in habitats that are close to overhead lines, but birds undertaking longer movements also collide with overhead lines elsewhere. The potential for swans to cross the line of the Tyrone – Cavan Interconnector towards the north of the line has been addressed by including diverters in the design of the overhead line, between Towers 1 and 13 and between Towers 30 and 43. A review of the effectiveness of line marking as a means of reducing bird impacts and mortality from overhead line collisions, indicated that line marking results in significant reductions in bird collisions (MacKenzie Bradshaw 2006, Frost, 2008). Spiral diverters on conductors have been shown to reduce annual losses of mute swans at Abberton Reservoir SPA to near zero (Frost, 2008). The already likely low potential for mortality arising from collision with the proposed overhead line is therefore likely to be lowered further by the use of line markers on the earth wire, such that no doubt remains and there will be no adverse effect upon the integrity of any European site

A review of the effectiveness of line marking as a means of reducing bird mortality from overhead line collisions indicated that line marking results in significant reductions in bird collisions (MacKenzie Bradshaw 2006). Whilst it is possible that at some time there will be collisions of whooper swans with the proposed overhead line, the effect on the population of whooper swans as a whole will be de minimis, as the numbers involved would be inconsequential when compared with the overall whooper swan population visiting Ireland annually and any mortality arising from the collisions will not affect the integrity of the European site or its conservation objectives.

5.8.2 Wetland Habitats, Pollan (Ramsar Site Features)

Potential impacts from construction of the Tyrone – Cavan Interconnector include discharge of pollutants (including silt) to water courses. There is a negligible potential for pollutants to reach the waters of the SPA and Ramsar site, with adverse effects on wetland habitats and fish species. Pollution prevention and control measures will be a part of the standard mitigation measures for the Tyrone –

Cavan Interconnector, and have been provided in the Outline Construction Environmental Management Plan (Outline CEMP) as presented in the Consolidated ES Addendum (2015) and will be included in the contractor's site management documentation.

NIEA along with the Environment Agency for England and Wales (EA) and the Scottish Environment Protection Agency (SEPA) publishes a series of good practice guidance Pollution Prevention Guidelines (PPG) and Guidance on Pollution Prevention (GPP) documents¹¹. Other good practice guidance can be found in documents published by Construction Industry Research and Information Association (CIRIA). Construction of the Tyrone – Cavan Interconnector will be in accordance with good practice set out in the documents listed below:

- DCAL (no date) Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites;
- Loughs Agency (2011). Guidelines for Fisheries Protection during Development Works (Foyle and Carlingford Areas): Environmental Guidelines Series – No. 1;
- SEPA (2010) Engineering in the Water Environment Good Practice Guide: Construction of River Crossings; Second Edition;
- CIRIA Report 648 (2006) Control of Water Pollution from Linear Construction Projects – Technical Guidance;
- CIRIA C741 (2015) Environmental Good Practice on site (4rd Edition);
- CIRIA C753 (2015) SuDS Manual; and
- NIEA (2004) Getting Your Site Right: Industrial and Commercial Pollution Prevention.

NIEA Pollution Prevention Guidelines (PPG), the most relevant being:

- PPG 1 – PPG 1: Understanding your environmental responsibilities - good environmental practices (July 2013);
- GPP 2 – Above Ground Oil Storage Tanks (January 2018);
- PPG 3 – Use and Design of Oil Separators in Surface Water Drainage Systems (April 2006);
- GPP 4 – Treatment and disposal of wastewater where there is no connection to the public foul sewer (November 2017);
- GPP 5 – Works and Maintenance In or Near Water (January 2017);
- PPG 6 – Working at Construction and Demolition Sites (April 2012);
- PPG 7 – Safe storage - The safe operation of refuelling facilities (July 2011);
- GPP 8 – Safe Storage and Disposal of Used Oils (July 2017);
- GPP 13 – Vehicle Washing and Cleaning (April 2017);
- PPG 18 – Managing Fire Water and Major Spillages (June 2000);
- GPP 21 – Pollution Incidence Response Plans (July 2017);
- GPP 22 – Dealing with Spills (October 2018); and,
- GPP 26 - Safe Storage - Drums and Intermediate Bulk Containers (February 2019).

Appropriate consents will be required for works affecting watercourses and construction work will comply with any conditions imposed. Applications for appropriate permits will be made following detailed design. All consents, permits and licences will be in place prior to commencement of any works.

¹¹ A review plan for the PPGs is currently underway, replacing them with a replacement guidance series, Guidance for Pollution Prevention (GPPs). Where a revised GPP document has not been issued by the relevant authorities, the relevant PPG will be used for guidance.

The mitigation measures that will be adopted to control silt-laden runoff and spillages are described below.

5.8.3 Management of Silt-laden Runoff

Within the framework of mitigation outlined in the Consolidated ES and the Outline CEMP, the Contractor will prepare and implement a Silt Management Strategy to:

- Programme and manage construction activities to prevent sediment generation;
- Protect water bodies from sediment pollution by preventing silt-laden runoff reaching watercourses; and
- Manage measures to treat runoff prior to discharge (under consent from NIEA if to watercourse).

The Silt Management Plan will ultimately prevent sediment leaving the construction site.

5.8.4 Managing Generation of Silt-laden Runoff

The first step towards preventing silt pollution from construction works is to minimise the generation of silt-laden runoff. This will be achieved by carefully planning the site works so that activities likely to generate silt-laden runoff are carried out during drier months, and erosion of surface soils is controlled.

Seasonal weather patterns will be taken into consideration when programming and planning construction activities. Existing vegetation will be retained where possible as mature vegetation holds the soil and prevents soil erosion. Areas where vegetation clearance is required will be kept to a minimum, and the works divided into phases, with seeding and planting of the phases that are complete. This will minimise the areas of exposed soil and thus the risk of erosion.

Site compounds and stockpiles will be kept to a minimum and will be located well away from any watercourses (>50 m). To minimise the loss of sediment from stockpiles they will be located away from drains and watercourses, to minimise the amount of silt-laden runoff available as a result of rainfall events.

Vehicle crossings of watercourses will be minimised and will use designated crossing points only. Site water will be pumped or directed to settling lagoons or other treatment prior to consented discharge to watercourses or groundwater via field spreading (See Section "Measures to Treat Runoff").

5.8.5 Prevention of Silt-laden Runoff Entering Watercourses

Despite efforts to minimise the amount of silt-laden runoff generated on site (including dewatering), under wet conditions some will inevitably form and will need to be managed to prevent it reaching watercourses untreated. Site water will be intercepted by a temporary drainage system using filter and cut off drains and pumped or directed to settling lagoons or other treatment prior to consented discharge to watercourses or groundwater via field spreading (See Section "Measures to Treat Runoff"). The Contractor will ensure that there is adequate space available for the interception and treatment of silt-laden water. In addition, those areas where the risk to a watercourse is greater (i.e. where the proposed scheme crosses the watercourse or where works are adjacent to a watercourse) will require site-specific measures (below) to manage the risk from silt pollution.

The drainage system described above will prevent silt-laden runoff from entering watercourses and minor drainage ditches (leading to these watercourses) without treatment. A multi-barrier approach (e.g. 10m vegetation buffer strips along watercourses, earth bunds, silt fences, straw bales wrapped in geotextile, or proprietary treatment) will be implemented on a site specific basis and subject to full regulatory controls imposed by NIEA. Additionally, cut off channels will be used where appropriate to minimise over land flow. Further, existing purpose built surface water drains will be blocked or protected to prevent the ingress of silt-laden runoff and to ensure that the watercourses are not polluted indirectly. Works in watercourses are considered separately below.

5.8.6 Measures to Treat Runoff

Although the generation of silt-laden runoff can be minimised, some silt-laden runoff will form during wet weather, dewatering excavations, works in and adjacent to watercourses, and to a lesser extent

from the use of any water during construction. As a result, the contractor will develop and implement a drainage system based on the principles of Sustainable Drainage Systems and other methods (e.g. pumps and silt filtering equipment) to intercept and treat silt-laden runoff. The framework of such measures is provided for in the Consolidated ES and Outline CEMP. Other pollutants, such as hydrocarbons, may also be present in runoff and require treatment (see “Water Quality Monitoring” below). These measures will be regularly maintained to ensure they are operating correctly and efficiently. No discharges of untreated silt-laden water to watercourses will be allowed and only treated water can be discharged to a watercourse (or other controlled water) under consent from NIEA (which will impose standards on the quality of allowed discharges).

There will be daily inspections by the Environmental Manager to ensure compliance with the agreed mitigation measures. There will also be weekly inspections by the Employer’s Agent (e.g. Environmental/Ecological Clerk of Works). Records will be kept of findings and any remedial measures required to maintain best practice across the site with respect to protection of the water environment.

Storage of runoff from the substation site from possible locally severe storm conditions will be provided adjacent to the sub-station site. Construction SuDS will be used during construction with the most appropriate method at each location to be used by the contractor from soakaways, infiltration basins, settlement ponds, etc. Depending on the treatment methods used and particularly if those involving vegetation are chosen, sufficient time will be left for them to become established (e.g. swales, reed beds, etc). Discharges will only be carried out if consent from NIEA is in place. As the Tyrone – Cavan Interconnector already incorporates an attenuation pond as part of the substation drainage system for its operational phase, it will be utilised with the principles of Sustainable Drainage Systems. Any silt will be removed prior to its use in the operational phase. Finally, as provided for in the Outline CEMP, an Emergency Response Plan will be put in place during the construction phase. This will allow adequate procedures to be followed in the event of an emergency (e.g. unexpected heavy rainfall).

5.8.7 Work in, near or potentially liable to affect watercourses

Potential for adverse impacts are greater where works are in and adjacent to watercourses. Such work will be minimised where possible, but where it is essential it will be carried out in accordance with the (EA, SEPA, NIEA) PPG 5 and Consents from the NIEA and Rivers Agency. In particular:

- All works will be carried out under a Method Statement approved by the Rivers Agency and NIEA;
- Affected area to be kept to a minimum and agreed with the Employers Agent;
- Works to be carried out during dry weather;
- Other than where there are works direct to a watercourse, 10m vegetated buffer strips will be maintained.
- Temporary crossings of watercourses will be avoided where possible. However, if required these will be subject to the same design controls as permanent structures, as described in the guidance documents listed above;
- A boom is to be set out across the channel downstream to collect oil/surface material;
- Pre-fabricated structures to be used wherever possible to minimise the use of wet concrete near water. Pouring of concrete will take place in dry conditions only;
- No refuelling of plant or machinery is to take place near watercourses (designated sites within construction compound to be used only); and
- All plant to be clean and self-bunded.

5.8.8 Storage and Spillage Emergency Response

The storage and use of potentially polluting chemical substances, including fuel and other oils will be in accordance with good practice guidance listed earlier and will include as a minimum the following measures:

- Fuel and other potentially polluting chemicals will be stored in the Construction Compound well away from any watercourses in a secure impermeable and bunded storage area (minimum capacity 110%);
- Refuelling of plant and maintenance of vehicles and equipment will take place in a designated area at the site compound only (> 50 m away from any watercourse);
- Fixed plant and all storage tanks will be self-bunded;
- Mobile plant will be in good working order, kept clean and fitted with drip trays in situations where oil is at risk of leaking;
- A Pollution Prevention Plan will be prepared and construction workers trained to respond to spillages. This will describe measures to prevent pollution and the procedures in the event of an environmental emergency occurring, such as a spillage. Additionally, a Pollution Incident Response Plan will be put in place as part of the EMS. Staff will be trained as part of the Site Induction and Tool Box Talks and made aware of the NIEA's emergency hotline – 0800 80 70 60);
- Spillage kits and oil absorbent material will be carried by mobile plant and located at vulnerable locations (e.g. crossings of land drains and ditches);
- Designated concrete wash out areas (with containment for tinkering away) will not be constructed near watercourses (> 50 m away) in accordance with good practice guidance and will be clearly identified and used;
- Boot/wheel wash facilities will be available with water collected and treated prior to consented discharge;
- Stockpiles of fill material will be kept to a stable size, well away from any watercourse, bunded or seeded with grass as required (>50 m away);
- Runoff from machine wash / service areas, construction waste / debris will be prevented from entering any water body; and
- The site will be secured to prevent vandalism.

5.8.9 Post-construction Monitoring

Following construction, drainage from the Turleenan substation site will be directed into a substantial SuDS pond (~85m long and 14.5m wide). Following separation of suspended sediment, water will be discharged into the adjacent minor stream. The stream waters will be subjected to regular monitoring to ensure that sediments are not released into any watercourse.

Summary

Lough Neagh and Lough Beg SPA - Potential collision of very low numbers of migrating, dispersing or commuting whooper swans with the proposed overhead line during operation. Any such impacts through collision are considered to be de minimis in terms of the overall SPA population and will not adversely affect the integrity of the site. The inclusion of bird flight diverters at the northern end of the overhead line will further reduce any potential collisions, so that a conclusion of no effect on integrity is beyond doubt.

Lough Neagh and Lough Beg Ramsar site – With standard mitigation as prescribed in the Consolidated ES, potential contamination of wetland habitats and indirect impacts to the pollan population via discharges into the Blackwater River during construction and operation will not occur. There is no potential for adverse effects to arise and thus no impacts to site integrity will occur.

5.9 Lough Foyle SPA & Ramsar and Lough Swilly SPA

The Lough Foyle SPA / Ramsar and Lough Swilly SPA are located remotely to the overhead line. However, a large proportion of the whooper swan wintering population makes its initial autumn landfall at these two sites, and so large scale mortality of the species elsewhere in Ireland has the potential to affect the designation feature of these European sites. Many of the birds using the sites will move on to the Lough Erne complex or will otherwise pass well to the west of the location of the proposed Tyrone – Cavan Interconnector as they disperse to sites further south in Ireland. However, some birds will

move on to Lough Neagh and may then continue to sites that may require crossing the line of the Tyrone – Cavan Interconnector, with a consequent risk of collision. The assessment and mitigation that are applied to the Lough Neagh and Lough Beg SPA above are therefore applicable to this part of the Lough Foyle/Swilly designation feature.

Summary

Lough Foyle SPA and Lough Swilly SPA - Potential collision of very low numbers of migrating, dispersing or commuting whooper swans with the proposed overhead line during operation. The potential impacts through collision are considered to be de minimis and will not adversely affect the overall SPA population of these species or the integrity of the site. The inclusion of diverters at the northern end of the Tyrone – Cavan Interconnector will remove beyond doubt any potential for effects on integrity of any European site.

5.10 Lough Oughter Complex SPA

The Lough Oughter Complex SPA is likely to be the destination of a part of the population that arrives in Ireland on the north coast and may therefore include birds that have used Lough Foyle as a staging post. The most direct route between north coast arrival areas and Lough Oughter lies to the west of the Tyrone – Cavan Interconnector, but given the species propensity to wander, it is likely that some birds that use this SPA will at some time cross the line of the Tyrone – Cavan Interconnector. The comments and mitigation that are applied to the Lough Neagh and Lough Beg SPA above are therefore applicable to this part of the Lough Oughter designation feature.

Summary

There is potential for collision of very low numbers of migrating, dispersing or commuting whooper swans with the proposed overhead line during operation. The potential impacts through collision are considered to be de minimis and will not adversely affect the SPA population of this site or the integrity of the site. The inclusion of diverters at the northern end of the Tyrone – Cavan Interconnector will remove beyond doubt any effects on integrity of any European site.

Table 5.2: A summary of the assessment on Site Integrity for the selected species. For clarity other qualifying features are included.

Site	Designation feature	Potential for Impact	Effect
Lough Neagh and Lough Beg SPA/Ramsar	Breeding common tern;	Negligible (de minimis) – Birds likely to be restricted to vicinity of the SPA during the breeding season.	No adverse effect
	Breeding bird assemblage;	Negligible – Birds likely to be restricted to vicinity of the SPA during the breeding season.	No adverse effect
	Wintering Bewick’s swan, whooper swan (Annex I species);	Potential collision impacts on small numbers of migrating, dispersing or commuting birds (whooper swan) – negligible in the context of designated site populations Negligible (Bewick’s swan) - now a rare species in Northern Ireland, and rarely recorded in the vicinity of the Tyrone – Cavan Interconnector. Limited numbers of birds available for collision.	No adverse effect
	Wintering waterfowl assemblage; and	Negligible – Birds likely to be restricted to vicinity of the SPA during winter. Migration direction dominantly to/from east and north, with birds unlikely to pass through vicinity of overhead line. Wintering whooper swans as part of this assemblage are dealt with separately.	No adverse effect
	Regularly supports >20,000 waterfowl.	Negligible – Birds likely to be restricted to vicinity of the SPA during winter Migration direction dominantly to/from east and north, with birds unlikely to pass through vicinity of overhead line. Wintering whooper swans as part of this assemblage are dealt with separately.	No adverse effect
Lough Neagh and Lough Beg Ramsar	Natural or near-natural wetlands, common to more than one biogeographic region.	Impacts on habitats within Ramsar site from pollutants discharged into Blackwater River. Distance from Tyrone – Cavan Interconnector sufficient to mitigate surface water impacts.	No adverse effect
	Supports a population of pollan.	Potential impacts on fish within Ramsar site from pollutants discharged into Blackwater River. Distance from Tyrone – Cavan Interconnector and best practice sufficient to mitigate surface water impacts.	No adverse effect
Lough Oughter Complex SPA (Ireland)	Wintering whooper swan (Annex I species), wigeon.	Potential collision impacts on small numbers of migrating or dispersing birds (whooper swan). Whilst it is assessed that collisions of individual whooper swans may occur, it will not have an adverse effect on the integrity of the site. The following mitigation is proposed: Provision of diverters between Towers 1 and 13 and Towers 30 and 43. These are the highest risk areas close to potential commuting routes or feeding areas. Mitigation will improve visibility of overhead lines by whooper swan.	No adverse effect

Site	Designation feature	Potential for Impact	Effect
		Negligible – For wigeon, the site is distant and birds are unlikely to cross the proposed overhead line.	
	Breeding great crested grebe.	None – Birds likely to be restricted to the vicinity of the SPA during the breeding season	No adverse effect
	Wetland and waterbirds.	None - The site is hydrologically isolated and is in a different water catchment to the Tyrone – Cavan Interconnector and is therefore hydrologically isolated from the Tyrone – Cavan Interconnector	No adverse effect
Lough Foyle SPA	Wintering, whooper swan, bar-tailed godwit (Annex I species), light-bellied brent goose. Wintering waterfowl assemblage. Regularly supports >20,000 waterfowl.	Potential collision impacts on small numbers of migrating or dispersing birds (whooper swan). Whilst it is assessed that collisions of individual whooper swans may occur, it will not have an adverse effect on the integrity of the site. The following mitigation will prevent occasional collisions: Provision of diverters between Towers 1 and 13 and Towers 30 and 43. These are the highest risk areas close to potential commuting routes or feeding areas. Mitigation will improve visibility of overhead lines by whooper swan. Negligible - For remaining feature species, the site is hydrologically isolated and migration vectors are unlikely to cross the proposed overhead line.	No adverse effect
Lough Foyle Ramsar	A particularly good representative example of a wetland; a particularly good representative example of a wetland, which plays a substantial hydrological, biological and ecological system role in the natural functioning of a major river basin which is located in a trans-border position.	None - The site is in a different catchment to the Tyrone – Cavan Interconnector and is hydrologically isolated from the Tyrone – Cavan Interconnector.	No adverse effect
Lough Swilly SPA (Ireland)	Wintering, whooper swan, Greenland white-fronted goose (Annex I species), greylag goose. Wintering waterfowl assemblage. Regularly supports >20,000 waterfowl.	Potential collision impacts on small numbers of migrating or dispersing birds (whooper swan). Whilst it is assessed that collisions of individual whooper swans may occur, it will not have an adverse effect on the integrity of the site. The following mitigation will prevent collisions: Provision of diverters between Towers 1 and 13 and Towers 30 and 43. These are the highest risk areas close to potential commuting routes or feeding areas. Mitigation will improve visibility of overhead lines by whooper swan. Negligible - For remaining feature species, the site is distant and migration vectors are unlikely to cross the proposed overhead line.	No adverse effect

5.11 In Combination Effects

It is a requirement of the HRA process that 'in combination' effects, when the effects from one assessed plan or project combines and interact with the effects created by other plans and programmes. By acting together, the overall effect can be multiplied and can cause potential impacts on the integrity of designated sites.

It has been shown in the Screening determination and in the assessment of potential effects on site integrity that no likely significant effects are likely to arise during the construction or operation of the Tyrone – Cavan Interconnector. Individual birds may be at risk of collision, but this potential impact is considered de minimis in terms of both the local and overall SPA populations examined.

For the purposes of the Tyrone – Cavan Interconnector, the assessment of in combination effects has taken into account the findings of the Cumulative Impacts (Chapter 14, Volume 2 of the 2019 Addendum). The categories of other developments included have been taken to include all known overhead line developments with the potential for cumulative effects with the Tyrone – Cavan Interconnector. No other planning developments with the potential for significant in combination effects upon whooper swan populations that are qualifying features of European sites were identified. Additionally, no plans with the potential for significant in combination effects with the Tyrone - Cavan Interconnector were identified.

The following proposed overhead lines have been considered in terms of in combination effects:

- Tamnamore to Omagh 110kV network reinforcement project (planning permission approved and constructed). This is a 50km 110kV overhead electricity line and substation between existing NIE substations at Tamnamore (Dungannon) and Omagh. Tamnamore substation is located approximately 4.7km to the north west of the proposed interconnector at its closest point. The Tamnamore to Omagh line is located approximately 1.6km from the proposed interconnector at its closest point; and,
- North-South 400kV Interconnection Development (i.e. the section of the proposed interconnector in the Republic of Ireland) running from the Northern Ireland/Republic of Ireland border at a position between the townlands of Doohat or Crossreagh, County Armagh, and Lemgare, County Monaghan running south (via the Northern Ireland townland of Crossbane) to an existing substation at Woodland, County Meath.
- The existing 275kV line to the north of Moy running nearby to the Tyrone – Cavan Interconnector.

5.11.1 Tamnamore to Omagh Line

The conductor will be at a low level, carried on wooden poles that range from 12m to 22m in height, with the majority less than 15m in height, and is unlikely to have an impact on the whooper swan populations of European sites (RPS 2011). Bird species may in some circumstances suffer mortality from electrocution at overhead line towers and lines. However, this cause of death is most frequent at medium voltages, where power poles (1 kV to 60 kV) are constructed with close spacing between the pole, its cross arm and its wires or other energized parts such that birds can be electrocuted by completing an electric circuit (BirdLife International 2007). Electrocution of swan species on the Tyrone – Cavan Interconnector is unlikely because a bird would be required to make connection to two or more lines (to allow the flow of electricity). The size of whooper swan (and their wing span of c. 2.8m) and distance between the overhead lines (conductors) will mean that electrocution will not occur. This is because the birds will not be able to make contact with two conductors. Thus, in combination effects arising from electrocution and collision are not an issue with regard to passing swans.

5.11.2 North-South 400kV Interconnector Development

The continuation of the 400kV single circuit OHL from the area where the Tyrone – Cavan Interconnector crosses the jurisdictional border between the townlands of Doohat or Crossreagh, County Armagh, and Lemgare, County Monaghan to the existing 400kV substation at Woodland, Co. Meath, extending across lands in Counties Monaghan, Cavan and Meath (i.e. the EirGrid section of the overall proposed Interconnector), which has been subject to its own Habitats Regulations Assessment (Natura Impact Assessment).

- Any potential impacts (without mitigation) on European site features arising from the SONI proposal in combination with the North South Interconnector would be restricted to the following sites:
- Lough Neagh and Lough Beg SPA - Potential collision of small numbers of migrating, dispersing or commuting Whooper Swans with the proposed overhead line during operation;
- Lough Neagh and Lough Beg Ramsar site – Potential contamination of wetland habitats and pollan population via discharges into the Blackwater River during construction and operation;
- Lough Oughter Complex SPA - Potential collision of small numbers of migrating or dispersing Whooper Swans with the proposed overhead line during operation, principally when birds are relocating from the Lough Neagh staging area;
- Lough Foyle SPA - Potential collision of small numbers of migrating or dispersing Whooper Swans with the proposed overhead line during operation; and
- Lough Swilly SPA - Potential collision of small numbers of migrating or dispersing Whooper Swans with the proposed overhead line during operation.

Potential cumulative and in combination effects that may arise from the North-South 400kV Interconnection Development and its extension into Northern Ireland would be largely restricted to a potential to increase collision mortality of whooper swan (a designated feature of assessed sites). However, migratory movements for both the North-South 400kV Interconnection Development and the Tyrone - Cavan Interconnector have been identified as occurring primarily parallel to the overall proposed interconnector development, with only limited potential for crossing the North-South 400kV Interconnection Development on route to and from Lough Neagh and beyond. Any potential impacts to SPA populations from the Tyrone – Cavan Interconnector in Northern Ireland have been assessed as de minimis and therefore could not be considered to contribute to any significant cumulative effect with the North-South Interconnector. No regular flightlines were identified during the study. Occasional flights were noted during surveys and the corresponding section of the overhead line will be fitted with diverters as mitigation on a precautionary basis out of an abundance of caution. Therefore, it is considered that there would be no overall in-combination effects on the Whooper Swan populations following the implementation of the mitigation measures.

Areas and lengths of alignment for the North-South 400kV Interconnection Development proposed for marking with flight diverters are described as follows:

- Between Towers 139 and 147 where the alignment passes to the east of Ballintra it is recommended that approximately 2.8km of the earth wires are marked with swan flight diverters;
- Between Towers 160 and 169 where the alignment passes to the west of Lough Egish it is recommended that approximately 3.0km of the earth wires are marked with swan flight diverters;
- Between Towers 196 and 203 in the vicinity of Comertagh and Raferagh Loughs, it is recommended that approximately 2.5km of the earth wires are marked with swan flight diverters;

- Between Towers 257 to 268 near Cruicetown / Whitewood Lough; it is recommended that approximately 3.3km of the earth wires are marked with swan flight diverters;
- Between Towers 279 and 283 west of Clooney Lough; it is recommended that approximately 1.5km of the earth wires are marked with swan flight diverters;
- West of the Yellow River foraging area between Towers 291 and 295. The main identified flightline does not cross the alignment. However, there is potential that Whooper Swan could move towards the area of the alignment. Given that high numbers occur in this area it is recommended that approximately 1.5km of the earth wires are marked with swan flight diverters;
- Between Towers 307 and 312 at the River Blackwater crossing point it is recommended that approximately 1.6km of the earth wires are marked with swan flight diverters; and
- In addition, between Towers 355 and 357 (including the River Boyne Crossing), 60cm diameter marker spheres will be added to the earth wire to increase visibility.

A Habitats Directive assessment of the proposed interconnector has been separately undertaken for the Competent Authority in the Republic of Ireland (North-South 400 kV Interconnection Development Natura Impact Statement 2015). That assessment has also assessed the in combination effects of the proposed interconnector in Northern Ireland and the Republic of Ireland. It has concluded that because of the very low numbers of migratory flights, the Tyrone – Cavan Interconnector will not adversely affect the integrity of any of the relevant European sites.

The assessment concludes that there will be no adverse effects to the integrity of European sites under consideration, or to mobile species associated with those sites arising from the North-South 400kV Interconnection Development, alone or in combination with other plans or projects.

6. Conclusions

This Information to Inform Habitats Regulations Assessment has been submitted for the Tyrone - Cavan Interconnector to enable the Competent Authority to conduct a Habitats Regulations Assessment in relation to the European sites.

The Competent Authority:

- (i) must identify, in the light of the best scientific knowledge in the field, all aspects of the Tyrone - Cavan Interconnector which can, by itself or in combination with other plans or projects, affect the conservation objectives of the European site.
- (ii) may only include a determination that the Tyrone – Cavan Interconnector will not adversely affect the integrity of any relevant European site where the Competent Authority decides that no reasonable scientific doubt remains as to the absence of the identified potential effects.

This Information to Inform Habitats Regulations Assessment assesses the likely significance of all potential impacts arising from the Tyrone - Cavan Interconnector on the integrity of the relevant European sites. It has been prepared applying the precautionary principle and is based on the best scientific knowledge in the field.

It was considered that there were no significant effects on the qualifying features of Lough Neagh and Lough Beg Ramsar or its conservation objectives at Stage 1 Screening, but the assessment proceeded to a Stage 2 Appropriate Assessment, to consider the precautionary mitigation measures. Special reference

was paid to sites that are hydrologically connected to the area of the Tyrone - Cavan Interconnector and for which whooper swan was a designation feature.

The Information for Appropriate Assessment found that the Tyrone – Cavan Interconnector would have no adverse effects on the integrity of the following European sites in view of their conservation objectives; Lough Neagh and Lough Beg SPA and Ramsar, Lough Oughter Complex SPA, Lough Swilly SPA and Lough Foyle SPA and Ramsar Site, either alone or in-combination.

It is apparent that the choice of line route for the Tyrone – Cavan Interconnector, generally remote from designated conservation sites, means that the potential for direct impacts on European site qualifying features is avoided. The most frequent regular movements of local populations of whooper swans in the vicinity of the Tyrone – Cavan Interconnector do not intersect the proposed route in large enough numbers to have a significant effect on any European sites. The literature indicates that incidental mortality from overhead line collisions is generally not a biologically significant concern at a population level (e.g. Jans and Ferrer 1999, Hunting 2002).

Given the very low numbers of migratory flights of “SPA birds” expected to cross the alignment, any effects arising from collisions on the population of whooper swan associated with any of these European sites are considered de minimis and hence not likely to be significant, in view of the conservation objectives for Whooper Swan.

Accordingly, for the reasons set out in detail in this report, in the light of the best scientific knowledge in the field, all aspects of the Tyrone – Cavan Interconnector which, by itself, or in combination with other plans or projects, which may affect the relevant European sites have been considered. This report contains information which the Competent Authority, may consider in making its own complete, precise and definitive findings and conclusions.

It is concluded that all European sites detailed in this report have been assessed through the two-stage process and on the basis of objective information that the Tyrone - Cavan Interconnector, individually or in combination with other plans or projects, will have no, or no appreciable, effects on those sites in view of their conservation objectives and/or no effects on the integrity of any European sites.

Further to that conclusion, the information presented in this report will allow the Competent Authority, to undertake an Appropriate Assessment. The detailed information contained within this document together with the precautionary stance taken will allow the Competent Authority to ascertain that the Tyrone - Cavan Interconnector will not adversely affect the integrity of any of the European sites concerned.

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Annex A Conservation Objectives

Lough Neagh and Lough Beg SPA Conservation Objectives

DOE (2015) Lough Neagh and Lough Beg – Special Protection Area (SPA) UK9020091 Conservation Objectives. V4

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of Condition Assessment. The results of this will determine whether a feature is in favourable condition, or not.

The SPA selection feature objectives are:

- To maintain or enhance the population of the qualifying species
- Fledging success sufficient to maintain or enhance population
- To maintain or enhance the range of habitats utilised by the qualifying species
- To ensure that the integrity of the site is maintained;
- To ensure there is no significant disturbance of the species and
- To ensure that the following are maintained in the long term:
 - Population of the species as a viable component of the site
 - Distribution of the species within site
 - Distribution and extent of habitats supporting the species
 - Structure, function and supporting processes of habitats supporting the species

Lough Neagh and Lough Beg Feature Objectives

Feature	Component Objective
Common Tern breeding population	As above
Common Tern breeding population	Fledging success sufficient to maintain or enhance population.
Great Crested Grebe breeding population	As above
Great Crested Grebe breeding population	Fledging success sufficient to maintain or enhance population.
Great Crested Grebe passage population	As above
Whooper Swan wintering population	As above
Bewick's Swan wintering population	As above
Golden Plover wintering population	As above
Great Crested Grebe wintering population	As above
Pochard wintering population	As above

Feature	Component Objective
Tufted Duck wintering population	As above
Scaup wintering population	As above
Goldeneye wintering population	As above
Little Grebe wintering population	As above
Cormorant wintering population	As above
Greylag Goose wintering population	As above
Shelduck wintering population	As above
Wigeon wintering population	As above
Gadwall wintering population	As above
Teal wintering population	As above
Mallard wintering population	As above
Shoveler wintering population	As above
Coot wintering population	As above
Lapwing wintering population	As above
Waterfowl Assemblage wintering population	No significant decrease in population against national trends.
Waterfowl Assemblage wintering population	Maintain species diversity contributing to the Waterfowl Assemblage.
Habitat	To maintain or enhance the area of natural and semi-natural habitats used or potentially usable by Feature bird species subject to natural processes.
Habitat	Maintain the extent of main habitat components subject to natural processes.
Habitat	Maintain or enhance sites utilised as roosts.

Lough Neagh and Lough Beg Ramsar Conservation Objectives

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- Introduction/invasion of non-native plant species

Measures that have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

- Introduction/invasion of non-native plant species - Conservation Objectives for the site have been developed. These highlight the need for addressing the Spartina issue. Extent of Spartina extent being monitored. Future trials of selective herbicides to be undertaken ASAP. Site to be assessed to determine effectiveness of Spartina spraying. Rotovating techniques may be trialled.

Other current management practices:

- The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

Conservation measures proposed but not yet implemented:

- No information available

Lough Foyle SPA Conservation Objectives

DOE (2015) Lough Foyle – Special Protection Area (SPA) UK9020031 Conservation Objectives. V4

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of Condition Assessment. The results of this will determine whether a feature is in favourable condition, or not. The feature attributes and measures are found in the attached annexes.

The SPA selection feature objectives are:

- To maintain or enhance the population of the qualifying species;
- To maintain or enhance the range of habitats utilised by the qualifying species;
- To ensure that the integrity of the site is maintained;
- To ensure there is no significant disturbance of the species; and
- To ensure that the following are maintained in the long term:
 - Population of the species as a viable component of the site.
 - Distribution of the species within site.
 - Distribution and extent of habitats supporting the species.
 - Structure, function and supporting processes of habitats supporting the species.

Lough Foyle SPA Feature Objectives

Feature	Component Objective
Bewick's swan wintering population	As above
Whooper swan wintering population	As above
Golden plover wintering population	As above
Bar-tailed godwit wintering population	As above
Light-bellied brent goose wintering population	As above
Great crested grebe wintering population	As above
Cormorant wintering population	As above
Greylag goose wintering population	As above
Shelduck wintering population	As above
Wigeon wintering population	As above
Teal wintering population	As above
Mallard wintering population	As above
Eider wintering population	As above
Red-breasted merganser wintering population	As above
Oystercatcher wintering population	As above
Lapwing wintering population	As above
Knot wintering population	As above
Dunlin wintering population	As above
Curlew wintering population	As above
Redshank wintering population	As above
Waterfowl assemblage wintering population	As above

Feature	Component Objective
Waterfowl assemblage wintering population	Maintain species diversity contributing to the Waterfowl. Assemblage
Habitat extent	Maintain or enhance the area of natural and semi-natural habitats potentially usable by Feature bird species. (2056.13 ha intertidal area) subject to natural processes.
Habitat extent	Maintain the extent of main habitat components subject to natural processes.
Roost sites wintering population	Maintain or enhance sites utilised as roosts.

Lough Foyle Ramsar Conservation Objectives

Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

- Eutrophication
- Pollution – agricultural fertilisers

Measures that have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

- Eutrophication - Phosphate-stripping at appropriate sewage treatment works had begun to address the issue of eutrophication, but the nutrient problem has now been demonstrated to be predominantly due to non-point, agricultural, sources. Water Catchment Management Plan will be developed in context of the Water Framework Directive.
- Pollution – agricultural fertilisers - Phosphate-stripping at appropriate sewage treatment works had begun to address the issue of eutrophication, but the nutrient problem has now been demonstrated to be predominantly due to non-point, agricultural, sources. Water Catchment Management Plan will be developed in context of the Water Framework Directive.

Other current management practices:

- The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

Conservation measures proposed but not yet implemented:

- No information available.

Lough Swilly SPA Conservation Objectives

NPWS (2011) Conservation Objectives: Lough Swilly SAC 002287 and Lough Swilly SPA 004075. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

The Conservation Objectives for this site are:

To maintain the favourable conservation condition of the waterbird Special Conservation Interest species listed for Lough Swilly SPA, which is defined by the following list of attributes and targets (note that this objective relates to all waterbird species of Special Conservation Interest).

Parameter	Attribute	Measure	Target
Population	Population trend	Percentage change	The long-term population trend should be stable or increasing.
Range	Distribution	Number and range of areas used by waterbirds.	There should be no significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.

To maintain the favourable conservation condition of the wetland habitat at Lough Swilly SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attributes and targets.

Parameter	Attribute	Measure	Target
Area	Subtidal, Intertidal, Supratidal and lagoon (and associated) habitat areas	Area (Ha)	The permanent area occupied by the wetland habitat should be stable and not significantly less than the areas of 4,162, 2,419. 201 and 317 hectares for subtidal, intertidal, supratidal and lagoon (and associated) habitats respectively, other than that occurring from natural patterns of variation.

Site selection species for the Lough Swilly SPA are:

- Assemblage of over 20,000 waterbirds; whooper swan, Greenland whitefronted goose, greylag goose, shelduck, teal, mallard, red-breasted merganser, great crested grebe, oystercatcher, dunlin, curlew, redshank, black-headed gull (breeding) and common tern (breeding).

Additional species of Special Conservation Interest are:

- wigeon, shoveler, scaup, goldeneye, heron, coot, knot, greenshank and common gull.

Lough Oughter Complex SPA Conservation Objectives

NPWS (2018) Conservation objectives for Lough Oughter Complex SPA [004049]. Generic Version 6.0.
Department of Culture, Heritage and the Gaeltacht

The Conservation Objectives for this site are

To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

- Great crested grebe
- Whooper swan
- Wigeon

To acknowledge the importance of Ireland's wetlands to wintering waterbirds, "Wetland and Waterbirds" may be included as a Special Conservation Interest for some SPAs that have been designated for wintering waterbirds and that contain a wetland site of significant importance to one or more of the species of Special Conservation Interest. Thus, a second objective is included as follows:

To maintain or restore the favourable conservation condition of the wetland habitat at Lough Oughter Complex SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.

