Tyrone - Cavan Interconnector

Volume 3 - Part 4 of 5

Consolidated Environmental Statement

Appendices

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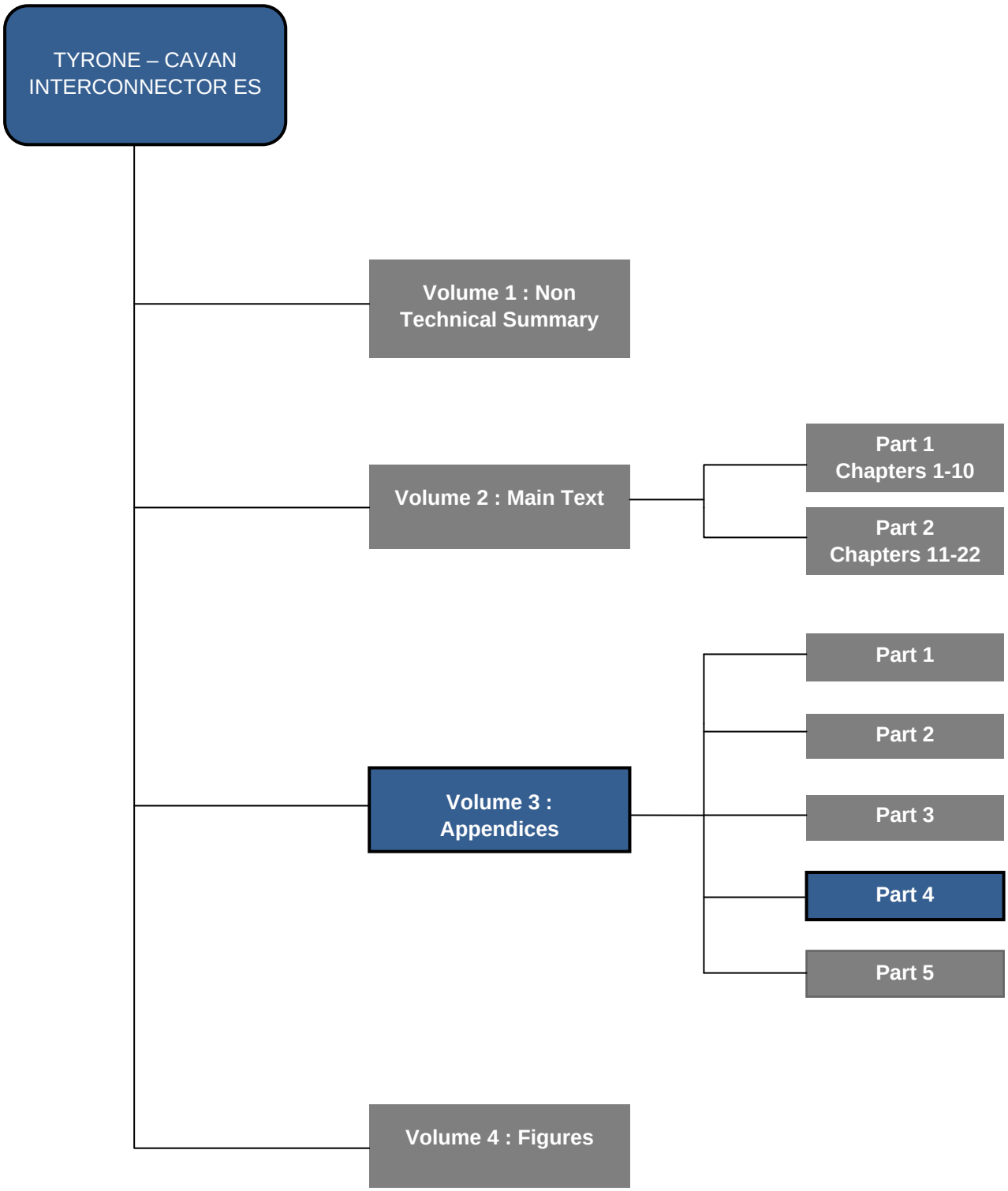
This document is Volume 3 : Appendices Part 4 of the
Tyrone – Cavan Interconnector Environmental Statement (ES).
The whole ES consists of a number of documents printed separately and should be read together.



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For ease of use this document has been printed in A4 format. Should a larger format be required, an electronic version is available at www.nie.co.uk.

Alternatively a printed A3 version may be obtained by contacting NIE at:

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Appendix 10E Badger Appendix

Confidential Appendix and has not been published in this ES. The information has been supplied to NIEA.

Appendix 10F Breeding Birds

Appendix 10F

Results of Breeding Bird Survey

RESULTS OF BREEDING BIRD SURVEYS

To read with Chapter 10 (Ecology) and Figures 10.15 – 10.48 (Breeding Birds Survey Results 2011 – 2012).

Table 1: Numbers of birds recorded along Proposed Development, with comments on breeding status. NC = not counted

Species	Surveys			Habitat	Comments
	2005-08	2011	2012		
Mallard A	1	3	-	Stream	Incidental sighting
Pheasant	3	7	3	Hedgerows	Incidental sightings
Heron	1	-	-	Stream	Incidental sighting
Sparrowhawk	3	1	1	Hedgerows	Incidental sightings
Buzzard	5	8	7	Hedgerows, woodland	Probable territories
Kestrel* A	1	-	1	Open countryside	Over
Moorhen	1	-	2	Swamp, pond	Probably breeding
Lapwing** R	2	-	-	Grassland	2 family parties
Curlew** A	3	-	1	Rush pasture	Possible breeding locations
Snipe* A	1	-	-	Rush pasture	Possible breeding
Lesser black-backed gull A	-	1	-		Flying over
Wood pigeon	35	53	70	Hedgerows, woodland	Probable breeding sites
Collared dove	1	1	4	Farmstead	Probably breeding
Cuckoo R	-	-	1	Hedgerow	Single record in May
Swift A	-	-	2		Over
Skylark* R	2	1	-	Grassland	Possibly breeding
Sand martin* A	-	2	-	Pond	Feeding at single location
Swallow* A	NC	28	63	Dwellings/farmsteads	Occasional overhead
House martin* A	-	2	10	Dwelling	Probably breeding
Meadow pipit A	9	-	5	Grassland, rush pasture	Territories
Grey wagtail A	2	-	-	Watercourses	Territories
Pied wagtail	3	1	5	Grassland	Locations
Wren	189	91	183	Hedgerows, woodland, scrub	Territories
Dunnock A	57	10	28	Hedgerows; scrub	Territories
Robin	179	29	154	Hedgerows, woodland, scrub	Territories
Blackbird	73	62	115	Hedgerows, woodland, scrub	Territories
Song thrush R	34	14	58	Hedgerows, woodland	Territories
Mistle thrush A	2	2	3	Grassland	Territories
Grasshopper warbler* R	1	-	-	Wet grassland	Territory
Sedge warbler	2	4	2	Rush pasture	Territories
Blackcap	4	14	63	Hedgerows	Territories
Whitethroat	4	1	3	Hedgerow	Territory
Chiffchaff	18	18	25	Hedgerows, woodland	Territories
Willow warbler A	107	76	112	Hedgerows, woodland, scrub	Territories
Goldcrest	9	-	-	Hedgerows, woodland	Territories
Spotted flycatcher* R	2	1	2	Hedgerow	Probable territory
Long-tailed tit	2	1	1	Hedgerows,	Family parties
Blue tit	29	9	34	Hedgerows	Territories

Species	Surveys			Habitat	Comments
	2005-08	2011	2012		
Great tit	33	19	46	Hedgerows, woodland	Territories
Coal tit	15	9	15	Hedgerows, woodland	Territories
Treecreeper	-	1	1	Wet woodland	Family (2011)
Magpie	NC	NC	NC	Ubiquitous	Frequent throughout corridor,
Jackdaw	NC	18	24	Dwellings/farmsteads	Probable nest sites
Rook	17	NC	NC	Grassland	Nests. Occasional feeding or overhead
Hooded crow	7	11	17	Hedgerows, woodland	Probable territories
Raven	2	-	-		Overhead
Starling* R	NC	9	35	Dwellings/farmsteads	Possible nest sites
House sparrow* R	NC	3	44	Dwellings	Locations
Tree sparrow* R	9	1	4	Hedgerow	Possible territory
Chaffinch	57	56	152	Hedgerows, woodland	Territories
Greenfinch	13	2	21	Hedgerows	Locations
Goldfinch	10	9	28	Hedgerows	Locations
Linnet* R	12	3	7	Hedgerow	Locations
Lesser redpoll R	4	2	5	Hedgerows, damp woodland, scrub	4 apparent territories
Bullfinch	12	12	20	Hedgerows	Probable territories
Reed bunting A	13	4	4	Rush pasture	Territories

Table 2: Conservation status of breeding birds recorded along proposed overhead line route

English name	Scientific name	Conservation status	English name	Scientific name	Conservation status
Blackbird	*Turdus merula*	Green List	Magpie	*Pica pica*	Green List
Blackcap	*Sylvia atricapilla*	Green List	Meadow Pipit	*Anthus pratensis*	Amber List
Blue Tit	*Parus caeruleus*	Green List	Mallard	*Anas platyrhynchos*	Green List
Bullfinch	*Pyrrhula pyrrhula*	Red List	Mistle Thrush	*Turdus viscivorus*	Amber List
Buzzard	*Buteo buteo*	Green List	Moorhen	*Gallinula chloropus*	Green List
Chaffinch	*Fringilla coelebs*	Green List	Pheasant	*Phasianus colchicus*	Green List
Chiffchaff	*Phylloscopus collybita*	Green List	Pied Wagtail	*Motacilla alba*	Green List
Coal Tit	*Parus ater*	Green List	Redpoll*	*Carduelis cabaret*	Amber List
Curlew**	*Numenius arquata*	Amber List	Reed Bunting	*Emberiza schoeniclus*	Red List
Dunnock	*Prunella modularis*	Amber List	Robin	*Erithacus rubecula*	Green List
Goldcrest	*Regulus regulus*	Green List	Rook	*Corvus frugilegus*	Green List
Goldfinch	*Carduelis carduelis*	Green List	Sedge Warbler	*Acrocephalus schoenobaenus*	Green List
Grasshopper Warbler*	*Locustella naevia*	Red List	Snipe*	*Gallinago gallinago*	Amber List
Great Tit	*Parus major*	Green List	Song Thrush	*Turdus philomelos*	Red List
Greenfinch	*Carduelis chloris*	Green List	Sparrowhawk	*Accipiter nisus*	Green List
Grey Wagtail	*Motacilla cinerea*	Amber List	Spotted Flycatcher	*Muscicapa striata*	Red List
Heron	*Ardea cinerea*	Green List	Starling	*Sturnus vulgaris*	Red List

English name	Scientific name	Conservation status	English name	Scientific name	Conservation status
Hooded Crow	*Corvus corone*	Green List	Stonechat*	*Saxicola torquatus*	Amber List
House Sparrow	*Passer domesticus*	Red List	Swallow*	*Hirundo rustica*	Amber List
Long-tailed Tit	*Aegithalos caudatus*	Green List	Tree Sparrow	*Passer montanus*	Red List
Jackdaw	*Corvus monedula*	Green List	Whitethroat	*Sylvia communis*	Green List
Kestrel	*Falco tinnunculus*	Amber List	Willow Warbler	*Phylloscopus trochilus*	Amber List
Lapwing**	*Vanellus vanellus*	Amber List	Wood Pigeon	*Columba palumbus*	Green List
Linnet	*Carduelis cannabina*	Red List	Wren	*Troglodytes troglodytes*	Green List

Conservation status derived from Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man (Eaton *et al*, 2009). Criteria for inclusion in the lists are:
Red List R – Species that are Globally Threatened according to World Conservation Union (IUCN) criteria; those whose population or range has declined rapidly in recent years (>50% in the last 25 years); and those that have declined historically and not shown a substantial recent recovery.

Amber List A – Species that have an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years (25-49% in the last 25 years); those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.

Green List – Species that fulfil none of the above criteria.

Species marked with * or ** are contained in a list produced by Birdwatch Ireland and RSPB of priority species for conservation action in an all-Ireland context (Lynas *et al* 2009). Species ** are red-listed as of high conservation concern, and are Globally Threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; or those that have declined historically and not shown a substantial recent recovery. Species * are amber-listed as of medium conservation concern, and are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; or those with internationally important or localised populations.

Appendix 10G Wintering Birds

Appendix 10G

Wintering Bird Survey

Introduction

This report assesses the potential for the Proposed Development (as detaild in Chapter 5 of the ES) to have significant effects on important wintering bird populations, taking into account the possible impacts outlined below.

The provision of overhead transmission lines has the potential to have adverse impacts on wintering birds as a result of (Haas et al 2003):

- electrocution arising from a bird completing an electrical circuit between two conductors;
- collision, as birds are intercepted, for example during movements between roost and feeding sites, or during migration; or
- the loss of useable feeding areas in staging and wintering habitats.

Electrocution is a particular risk for medium-sized and large birds that perch on transmission structures and are therefore able to bridge the gap between conductors. It should also be noted that few vulnerable bird species in the most at risk size range, and which habitually use transmission structures as perches, are present in the vicinity of the proposed overhead line route. Elsewhere, birds of prey have been recorded as particularly at risk from electrocution, and potentially vulnerable raptors in the study area are restricted to small numbers of buzzard Buteo buteo. However, this risk is greatest on structures with low to medium voltage capacities, where conductors are relatively closely spaced. Electrocution is not a significant problem for high voltage overhead lines, where conductors are of necessity widely spaced. The impact of electrocution as a significant factor with a potential impact on wintering birds is therefore not considered further.

A number of wintering bird species that are known to be vulnerable to collision with overhead lines are present within the general area of the proposed overhead line. The main wintering bird species of concern on which the provision of a new overhead line and substation are considered to have a potential impact are whooper swan *Cygnus cygnus,* and possibly Bewick's swan *Cygnus columbianus bewickii* and goose *Anser* species. These species are known to use traditional wintering sites for both f proposed towers and substation oraging and overnight roosting, and therefore undertake regular daily movements that have the potential to bring them into repeated close proximity to structures placed between these sites. These species also undertake regular seasonal movements through the study area between staging sites on the north coast and Lough Neagh/Beg, and wintering sites within the study area and beyond. The potential for collision of these species with the proposed overhead line is therefore considered in some detail.

The presence of man-made structures has the potential to displace bird species through removal of habitat that is currently used for a particular function, for example feeding or roosting. Structures may also inhibit some birds of some species from using land close to the structures. Avoidance of the proposed towers and substation may therefore reduce the area of favoured habitat available for feeding or roosting. This potential impact on wintering birds is therefore also considered further.

Background

Whooper swans are included in Annex I of the consolidated version of the Birds Directive (2009/147/EC), which lists species that 'shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.' The provisions of the Birds Directive are implemented in Northern Ireland through the Wildlife (Northern Ireland) Order 1985 (as amended), The Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended).

The special measures required by the Directive include the creation of designated Special Protection Areas (SPAs) to ensure that populations of Annex 1 species retain favourable conservation status. The Lough Neagh and Lough Beg SPA has been designated to provide

protection under the Directive to a number of species, including whooper swan. The Habitats Directive (92/43/EEC) requires that impacts on the designation features of European sites resulting from any scheme should be assessed to ensure that the conservation status of the featured species is not adversely affected. This provision applies to schemes that are to be developed both within and outside the geographical boundaries of a designated site.

Birds generally are vulnerable to tall structures, since, when in flight, their attention is not entirely focused on their direction of flight. In general, high resolution vision occurs in the lateral fields of view and frontal vision in birds may be tuned for the detection of movement rather than the detection of high spatial detail. Birds probably employ lateral vision for the detection of conspecifics, foraging opportunities and predators (Martin 2011). Swans are at particular risk from collision with overhead lines due to their large size, relatively poor manoeuvrability and poor forward visibility. Wintering whooper swans are also prone to collisions because of their habit of field-feeding, which means they generally spend part of each day flying to and from roosting and foraging areas, and between foraging areas., Flights are often in low light levels, i.e. pre-dawn and post-dusk periods, and therefore in poor visibility. These factors together explain why powerline collision is the most frequently reported cause of death of swans in the United Kingdom (Brazil 2003),

Whooper swan is also listed in the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), developed under the Bonn Convention. The AEWA applies to species of birds ecologically dependent on wetlands for at least part of their annual cycle. Parties to the Agreement are called upon to engage in a wide range of conservation actions such as species and habitat conservation, management of human activities, and research and monitoring. Within the UK, the species is Amber Listed (Eaton et al 2009) as a species of medium conservation concern because >50% of the UK non-breeding population occurs in 10 or fewer sites, and because the UK breeding population consists of less than 300 pairs. Similarly, the species is Amber Listed in an Irish context because the wintering population is of internationally important numbers and they are rare breeders (Lynas et al 2007).

It is therefore important to assess the potential impact of the proposed scheme on whooper swans because of the legislative status of the species, their particular vulnerability to collision with overhead lines, and their conservation status.

Other species that may be particularly vulnerable to collision with overhead lines also occur within the general area of the proposed line with some degree of regularity. Bewick's swan occurs sporadically in small numbers at a few traditional wintering sites within the Lough Neagh basin. Grey lag goose *Anser anser* occurs as a feral breeding species in small numbers throughout Northern Ireland, but larger gatherings occur in winter that may be of either local or migrant origin. Greenland white-fronted goose *Anser albifrons flavirostris* occurs occasionally in small numbers at a few sites in Northern Ireland, and migrant flocks also pass over the general area of the transmission line route. Bewick's swan and Greenland white-front are both listed in Annex 1 of the Birds Directive.

Survey Methodology

Four aspects of swan distribution were addressed, following consultation with NIEA, IWSSG and the RSPB, in order to assess the potential for impacts on whooper swans arising from the provision of the proposed overhead line and associated substation. The IWSSG was consulted for location of the nearest wintering sites to the proposed overhead line and substation, and for details of marked birds observed during surveys.

Use of Overhead Line Route by Foraging Whooper Swans

A corridor, approximately 500m wide, but wider where conditions appeared more suitable for the target species, was surveyed to establish whether swan feeding sites were present in the immediate vicinity of the proposed overhead line and substation site. Survey was conducted partly from the road and partly from walkover where the corridor was not visible from the road. The corridor (including the substation site) was surveyed on eleven occasions, between

November 2007 and March 2008, during January 2008 and April 2008, during October and November 2008, and during March 2009. This survey was followed up with surveys on 14/15 December 2010 and on 27/28 February 2011. Survey was conducted from the road, and approximately 95% of the line route was visible by this means. Much of the remaining route was characterised by steep slopes, by scrub or by small enclosed fields, none of which was assessed to be suitable as foraging habitat for swans. The dates of the various surveys described in this section are tabulated in Table 1.

Use of Blackwater River valley as a commuting/migration route for whooper swans

The Blackwater River valley was surveyed, on eleven dates spread through the winter months of 2006-2007, 2007-2008 and 2008-2009 to evaluate the possible use made of the valley by swans as a route between roosting and feeding sites. A vantage point near the proposed crossing point of the valley was used to observe any swan movements along the valley during the two hours immediately after daybreak and during the three hours immediately preceding last light. The vantage point also permitted viewing of the airspace to the south of the valley, and it was intended that an evaluation of the use of the valley compared with the local wider countryside would be made. The times of any swan movements, the numbers of birds involved, direction of flight and height of flight were all noted.

Potential for whooper swans foraging in the Blackwater River valley to commute across the proposed Overhead Line Route

The pattern of swan usage of the nearest traditional feeding sites to the proposed overhead line route over a winter was identified by visiting the well-known swan sites in the general vicinity of the Blackwater River valley. Sites were visited on six occasions in winter 2006-07, 5 occasions in winter 2007-08, three occasions in winter 2008-09 and 15 occasions in winter 2010-11. Counts were made of birds at traditional feeding sites that were considered to be possible sources or targets of birds that might use the valley as a route between feeding and roost sites, or that might commute between feeding and roosting sites on opposite sides of the proposed line route. The roosting behaviour of birds using traditional feeding sites was observed, particularly during 2010-11, when birds were followed as they flighted between feeding sites and roosts.

The intended schedule of visits (2010-11) was disrupted during December by severe weather with heavy snow and below freezing conditions. On nine of these visits, the largest group of swans was watched until the birds left to flight to roost at dusk, generally in very low light conditions. The direction of flight was noted, and the likely roost was then visited to confirm that the birds had indeed moved between the paired sites. At some sites, and on some occasions, birds did not leave feeding sites and these birds were watched until light conditions made it scarcely possible to see the birds, in order to ensure that they were in fact roosting at the feeding site. Again at some feeding/roost sites, additional birds arrived and the apparent direction from which they had flown was noted. This last action revealed the presence of a group of birds that had not been detected during daylight hours (06.01.11), and a follow-up visit was made to search for their feeding site (11.01.11). On one date (14.12.10) the valley was under snow cover, and no birds were seen.

Potential for whooper swans using the Keady lakes to cross the proposed Overhead Line Route.

RSPB in particular commented on the possibility that birds using lakes in the vicinity of Keady might commute to roost sites across the proposed route of the overhead line. The potential for swan movements between traditional wintering sites at lakes in the vicinity of Keady and sites in the Blackwater River valley around Caledon and cross-border sites in the Blackwater catchment in Co Monaghan was addressed by undertaking counts of swans using the lakes and observing their feeding/roosting behaviour. Flightlines and roosting behaviour were recorded at both the Keady lakes and the Blackwater River valley during the survey periods noted above. Severe weather again disrupted this programme during 2010-11, and swans were absent from the lakes during much of December and January. Monitoring visits of

roosts were undertaken on three dates in February and March 2011. The lakes were also visited on the Blackwater River valley survey dates in order to record the numbers of birds using the lakes through the winter.

Other wintering bird species

In addition, movements of other bird species upon which the overhead line might have an impact were noted.

Table 1: Dates of surveys of wintering swans

Date	Blackwater River commuting route survey		Blackwater valley survey		Keady Lakes feeding site survey		Overhead line route survey
	AM	PM	Feeding	Roosting	Feeding	Roosting	
01.11.06	✓	✓	✓				✓
05.12.06	✓	✓	✓		✓		✓
04.01.07	✓	✓	✓		✓		✓
29.01.07	✓	✓	✓		✓		✓
26.02.07	✓	✓	✓		✓		✓
26.03.07	✓	✓	✓		✓		✓
16.01.08	✓	✓	✓		✓		
29.01.08	✓	✓	✓		✓		✓
18.02.08	✓	✓	✓		✓	✓	
07.03.08	✓	✓	✓		✓		
04.04.08	✓	✓	✓		✓		✓
29.10.08	✓	✓	✓		✓		✓
11.11.08	✓	✓	✓		✓		✓
02.03.09	✓		✓	□	✓		✓
20.10.10			✓		✓	✓	
02.11.10			✓	□	✓		
15.11.10			✓	□	✓		
14.12.10			✓		✓		✓
15.12.10							✓
06.01.11			✓	□	✓		
11.01.11			✓	□	✓		
25.01.11			✓	□	✓		
27.01.11							✓
28.01.11							✓
03.02.11			✓	□	✓		
10.02.11			✓		✓		

Date	Blackwater River commuting route survey		Blackwater valley survey		Keady Lakes feeding site survey		Overhead line route survey
	AM	PM	Feeding	Roosting	Feeding	Roosting	
17.02.11			✓		✓	✓	
24.02.11			✓	□	✓		
04.03.11			✓	□	✓		
11.03.11			✓	□	✓		
17.03.11			✓		✓	✓	
24.03.11			✓		✓	✓	

Results

Use of Overhead Line Route by foraging whooper swans

Fields in the neighbourhood of the proposed overhead line route were surveyed in order to determine their potential as swan feeding grounds. The only site outwith the traditional sites highlighted by NIEA/IWSSG that held swans on survey days was at IGR H864577, within 1km of the proposed substation site. This location is on the Blackwater River floodplain, crossed by modified tributary streams and field drains. There were nine birds here on 05.12.06, and 19 on 29.01.09. Traditional feeding grounds of whooper swans are well known, and any sites outwith these that are used by whooper swans are likely to be used for short periods of time only. Use of non-traditional sites may result from random events, such as adverse weather conditions encountered during migration, or ephemeral floods, which could occur almost anywhere.

Use of Blackwater River valley as a commuting/migration route for whooper swans.

The main concern initially expressed by NIEA with regard to swan use of the Blackwater River valley in the vicinity of the proposed river crossing was that birds might preferentially use the valley as a route between roost and feeding sites, resulting in a concentration of birds flying along the valley in the vicinity of the proposed crossing and a consequent increase in collision risk. A total of 9 birds were seen on a single date (01.11.06) from a total of 11 observation dates.

Potential for whooper swans foraging in the Blackwater River valley to commute across the proposed Overhead Line Route.

A number of traditional whooper swan feeding sites in the general vicinity of the Blackwater River valley were highlighted by the Irish Whooper Swan Study Group (IWSSG) and NIEA through the consultation process as potential sources of swans at risk of collision with the proposed overhead line. An additional site at Clonbeg was occasionally in use during 2006 and 2009 and a further additional site (Ballymacully Road) that was in use during winter 2010/11 was found as a result of back tracking birds that had flighted in to roost at Annaghroe (RB06). The Ballymacully Road site is approximately 1km to the southeast of site RB05. Birds were absent from the latter site, and it is likely that birds that had used RB05 during earlier winters had moved to this new location. Records of birds using sites along the Blackwater River valley between 2006 and 2009 are shown in Table 2.

Table 2: Numbers of wintering swans using sites along Blackwater River Valley, 2006-09

Site \ Date	01.11.06	05.12.06	04.01.07	29.01.07	26.02.07	26.03.07	16.01.08	29.01.08	18.02.08	07.03.08	04.04.08	29.10.08	11.11.08	02.03.09
RB01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RB02	-	-	-	-	-	-	-	-	-	6	-	-	-	-
RB03	-	31	-	42	10	-	-	3	-	29	-	-	-	-
RB04	-	-	-	-	-	-	-	-	-	4	-	-	-	-
RB05	-	5	51	-	33	9	34	17	62	2	-	-	-	60
RB06	5	16	8	-	-	-	13		-	-	-	14	31	-
TY01	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TY02	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TY03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N70	7	17	21	-	-	-	18	26, 6B	-	-	-	-	-	-
N71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clonbeg	-	9	-	-	-	-	-	19	-	-	-	-	-	-
Enagh Lough														60R

Note: Records are of whooper swan, except for B = Bewick's swan. All records are at feeding sites except for R = roost. Site numbers are IWSSG site-specific codes.

Movements of wintering swans between feeding and roost sites are the most likely pathway that has a potential to bring birds into conflict with the proposed overhead line. A record of 60 birds that used the traditional feeding site at RB05 flighting to roost at Enagh Lough in March 2009 suggested that feeding and roost sites might be in close proximity to each other. A study over winter 2010/11 was designed to elucidate the relationship between feeding and roost sites; this relationship is described below for each known roost. Counts of birds at feeding and roost sites are shown in Table 3.

Table 3: Numbers of wintering swans using sites along Blackwater River Valley, 2010-11

Site \ Date	20.10.10	02.11.10	15.11.10	14.12.10	06.01.11	11.01.11	26.01.11	03.02.11	10.02.11	17.02.11	24.02.11	04.03.11	11.03.11	17.03.11	24.03.11
RB01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RB02	-	-	-	-	-	-	-	-	-	-	-	-	53F	-	-
RB03	1F	30 F	5 F	-	-	-	-	-	42F	2F	50F	65F	11F	44F	-
RB04	-	-	2F	-	10F	2F	-	-	-	-	-	-	-	-	-
RB05	-	-	-	-	-	-	-	-	-	2F	-	-	-	-	-
RB06	-	-	27F	-	4F 46R	22F 61R *	8F 53R	21F 23R	16F	23F	21F	-	3F	-	-

TY01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TY02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TY03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N70	-	-	77F 93R	-	-	-	-	-	-	-	17R	-	-	-	-
N71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ballymac ully Rd	-	-	-	-	-	39F	72F	32F	-	-	-	-	-	-	-
Enagh Lough	-	30R	-	-	-	-	-	42R	-	-	-	65R	60+ R	-	-
Moy	-	-	-	-	-	-	-	-	17F 2B	17F 2B	17F	-	-	-	-

Note: F=feeding, R=roosting. Since feeding and roosting birds are not mutually exclusive, columns cannot be added to produce totals for sites or for the study area. The absence of (R) records on any particular date should not be taken to mean that birds did not use roost sites in the Blackwater River valley on that date.

B=Bewick's swan.

* includes birds that left Ballymacully Road and are assumed to have roosted at RB06 (Annaghroe).

Annaghroe

Annaghroe (RB06) is a large intermittently flooded area that comprises compensation flood storage developed as part of the Blackwater Flood Alleviation Scheme. Whooper swans used the site frequently in small numbers (maximum 27 on 15.11.10) as a feeding site. A dusk watch on 06.01.11 produced a total of 25 swans arriving from the southwest to roost. These birds had presumably spent the day foraging at a site in Co Monaghan. A further 16 birds arrived from the north, the general direction of a regular feeding site at Caledon (RB05), but from which site birds had been absent during the preceding daylight hours. The flight vector of these birds was extrapolated, and a follow-up visit on 11.01.11 revealed a feeding group at Ballymacully Road. It is assumed that this site was the source of the birds seen at Annaghroe on 06.01.11., a view supported by the flight direction of birds leaving the site to roost on 11.01.11. A minimum of 45 swans arrived at Annaghroe to roost on 25.01.11. from the direction of the Ballymacully Road site, where 72 birds had been recorded feeding earlier in the day. By 03.02.11, the floods at Annaghroe had fallen considerably, and the site may have been less attractive as a roost. Only 2 additional birds came in to roost on this date, and the Ballymacully Road birds were by then using Lough Enagh as a roost. Around 20 birds continued to use Annaghroe as a feeding site into the beginning of February, but thereafter the site was much drier and was little used.

Lough Enagh

The earliest indication that Lough Enagh was in use as a roost was on 02.11.10, when 30 birds using the feeding site at Kedew Road (RB03) flighted into the lough at dusk. Birds were absent from the lough on visits in December and January, reflecting the freezing over of the lake, the absence of birds at Kedew Road, and the preference of birds from Ballymacully Road for Annaghroe as a roost site. However, with open water on 03.02.11, 42 birds were recorded, presumably including the 32 birds from Ballymacully Road that were seen to leave from that feeding site in the direction of the lough. This behaviour recalls the roost movement to the lough recorded in March 2009 of birds that fed at Caledon (RB05). The excess of birds at the lough over the Ballymacully Road flock indicates that a small number of additional birds used the roost on 03.02.11. The origin of these excess birds is not known. Birds deserted

the Caledon/Ballymacully Road site during much of February and all of March, and may have moved to Kedew Road, Dyan, where two sites (RB02 and RB03) were in use at that time. Birds from Kedew Road were seen to use the Enagh Lough roost into March.

Derryscollop

Derryscollop (N70) is used intermittently as a feeding site following the rise of floodwaters at the site. Birds were recorded on floods on 15.11.10, with 63 birds present at 12.00 hrs increasing to 77 by 15:30. These birds roosted at the site, and were joined at dusk by small parties of birds arriving from the south (7 birds) and apparently from the north (9 birds). With freezing conditions, the site had been deserted by 14.12.10. Seventeen birds had returned to renewed floods around 300m from the roost site on 10.02.11. The whoopers continued to use this feeding site after floods had abated and on 24.02.11 were seen to fly the short distance (around 300m) to roost at the flooded site previously used.

Potential for whooper swans using the Keady lakes to cross the proposed Overhead Line Route.

Small numbers of whooper swans traditionally use lake sites (Tullynawood Lough/Darkley Lough/Gentleowens Lough/Aughnagurgan Lough) in the vicinity of Keady. Previous observations have shown that swans commute between several of the lakes in the Keady area, and birds using the area appear to be site-resident over prolonged periods. Small numbers of swans may also use any of the smaller lakes (for example Straghans Lough) in the area on occasion, but these may not be part of their regular winter range. As well as the sites monitored for this study, there is a potential for birds using the Keady lakes to commute to sites in the Blackwater catchment in the Republic of Ireland, around 20km to the west. The Monaghan site supports small numbers of Whooper Swans annually, with a peak count of 55 noted by Crowe (2005).

Clay Lake was the most continuously used feeding site during the winter of 2010/11, but was deserted during December and January, during which time the lake was largely frozen over. Numbers using the lake were highly variable, and may have included on occasion birds that generally used other lakes in the vicinity. The particularly large flock seen on 04.03.11 of 48 birds may have included migrants that were returning northwards from sites elsewhere in Ireland. Robinson *et al* (2004) indicate that the Keady lakes may support regularly around 20 birds. This assertion was supported by records of up to 10 birds that frequented the lake during winters 2007/08 and 2008/09. Birds were seen during this earlier study to leave grazing sites onshore to roost on the adjacent lake. Birds using the site were also seen to roost on the lake on 17.03.11. and 24.03.11. Counts of birds at Keady Lake sites are shown in Table 4.

Table 4: Numbers of wintering swans using sites at Keady Lakes, 2010-11

Site \ Date	20.10.10	02.11.10	15.11.10	14.12.10	06.01.11	11.01.11	25.01.11	03.02.11	10.02.11	17.02.11	24.02.11	04.03.11	11.03.11	17.03.11	24.03.11
Clay lake	14	21	39	-	-	-	-	9	-	7	11	48	-	12	10
Tullynawood Lake	-	-	7	-	-	-	-	-	-	35	-	-	-	-	-
Gentle Owen Lake	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
Darkley Reservoir	-	-	-	-	-	-	-	-	-	-	36	-	-	-	-

Birds appeared to use Tullynawood/Gentle Owen/Darkley lakes intermittently, although the same birds that were present at Tullynawood Lake on 17.02.11 were using fields at Darkley Reservoir on 24.02.11. These birds included two colour-ringed individuals, detailed below (Tables 5, 6, data provided by IWSSG). Birds using the fields at Tullynawood Lake on 17.02.11 were seen to roost on the lake.

Table 5: Bird KPZ Yellow (ring no A5364) Sightings

Status	Date	Location	Co-ordinates
Ringed	07/08/1999	Miklavatn, Skagafjordur,Iceland	65°42.00'N 19°34.98'W
Sighting	05/03/2000	Mullanary Lough South, Co.Monaghan,Ireland	54°5.52'N 6°58.02'W
Sighting	14/01/2001	Lough Corby, Upper L.Erne, Co. Fermanagh, Northern Ireland	54°10.98'N 7°24.00'W
Sighting	27/10/2001	Blackbrae, L.Foyle, Co. Londonderry, Northern Ireland	55°3.48'N 7°12.00'W
Sighting	24/01/2003	Kiltybane Lough, Co. Armagh , Northern Ireland	54°7.02'N 6°37.98'W
Sighting	19/12/2003	Darkley Lough, Co. Armagh, Northern Ireland	54°12.78'N 6°40.92'W
Sighting	31/10/2004	Broglasco, Lough Foyle,Co. Londonderry, Northern Ireland	55°3.78'N 6°58.98'W
Sighting	07/11/2004	Lomond Road, Myroe, Co. Londonderry, Northern Ireland	55°4.68'N 6°58.20'W
Sighting	13/03/2005	Gentle Owens Lake, Co. Armagh, Northern Ireland	54°12.00'N 6°46.02'W
Sighting	27/01/2007	Darkley Lough, Co. Armagh, Northern Ireland	54°12.78'N 6°40.92'W
Sighting	22/12/2007	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.00'N 6°40.98'W
Sighting	01/02/2009	Oram, Co.Monaghan, Ireland	54°9.18'N 6°42.66'W
Sighting	20/11/2010	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.00'N 6°40.98'W
Sighting	17/02/2011	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.00'N 6°40.98'W

Table 6: Bird 55J Yellow (ring no W03596) Sightings

Status	Date	Location	Co-ordinates
Ringed	19/11/2003	WWT Martin Mere, Lancashire, England	53°37.50'N 2°52.02'W
WWT Centre	22/03/2004	WWT Martin Mere, Lancashire, England	53°37.50'N 2°52.02'W
WWT Centre	09/02/2005	WWT Martin Mere, Lancashire, England	53°37.50'N 2°52.02'W
WWT Centre	31/10/2005	WWT Martin Mere, Lancashire, England	53°37.50'N 2°52.02'W
Sighting	27/01/2007	Darkley Lough, Co. Armagh, Northern Ireland	54°12.78'N 6°40.92'W
Sighting	22/12/2007	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.00'N 6°40.98'W
Sighting	21/12/2008	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.30'N 6°40.68'W
Sighting	01/02/2009	Oram, Co.Monaghan, Ireland	54°9.18'N 6°42.66'W
Sighting	15/01/2010	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.30'N 6°40.68'W
Sighting	17/02/2011	Tullynawood Lake, Co. Armagh, Northern Ireland	54°12.30'N 6°40.68'W

Bird KPZ appears to have used wintering sites to the west of the proposed line route during at least the first two winters after being ringed in Iceland. Subsequently the bird has used sites to the east of the proposed line route on at least seven of the last eight years. Although there is no indication that the bird remained at a particular site or general area throughout each winter, these records suggest considerable site faithfulness between winters. Sightings from

the Lough Foyle area of County Londonderry reflect the landfall of birds arriving from Iceland, either directly or via western Scotland.

Bird 55J shifted its wintering area from Martin Mere to Northern Ireland, and has spent at least three of the past four winters in the Armagh/Monaghan area. Sightings of this bird are restricted to sites to the east of the proposed overhead line route.

IWSSG consultation

The location of the Proposed Development well to the west of the Keady lakes suggests that it will have little impact on birds that are wintering there (pers com. J. Devlin). Swans readily move between the lakes when they are disturbed. IWSSG is not aware of any movement of swans across the proposed line route when they are wintering in the area. Migration routes of swans as they enter and leave the wintering area are not known.

Other wintering bird species

No significant records of other wintering bird species were made during 2010/11. Records from surveys during winters 2006/07 -2008/09 are summarised below.

Records of other species that may use the airspace likely to be occupied by the transmission line are:

6 Bewick's swans were present at Derryscallop (site N70) on 9.01.08;

2 Bewick's swans were present at Derryscallop on 10-17.02.11;

I9 greylag geese with the swan flock at site RB05 on 04.01.07;

33 greylags at RB05 on 29.01.07;

51 greylags at site RB06 on 16.01.08.

3 Greenland white-fronted geese at RB06 on 16.01.08;

3 Greenland white-fronted geese at RB06 on 11.11.08.

Herons use the Blackwater River in the vicinity of the proposed river crossing as a feeding area. Occasional, mainly isolated, birds were seen to move from feeding station to feeding station along the river during the dawn and dusk vantage point watches. Cormorants also use the river in this area as a food source, and were occasionally seen following the course of the river at heights of <20m.

Small numbers of gulls, mainly black-headed gulls, with occasional herring gulls and lesser black-backed gulls were seen to follow the line of the Blackwater in the vicinity of the proposed crossing during the winter months. 62 black-headed gulls moved westwards on 07.03.08, often at heights below 50m.

A westward movement of lapwings on 29.01.08 occurred to the north of the Blackwater river valley crossing point, and was clearly not constrained by the local topography, as the movement took place at a height of around 100m. A total of 290 birds was observed over the five hours of the dawn and dusk vantage point watches, and the movement was likely to be weather-related.

Discussion

Use of Blackwater River valley as a commuting/migration route for whooper swans

The small number of birds seen using the valley in the vicinity of the river crossing as a route suggests that this part of the valley at least is of low importance for swan navigation between roosts and feeding sites, or as a migration route. The few birds recorded at the crossing occurred in November, and may have been birds moving to their wintering sites from staging

sites to the north. The overall absence of records may reflect a possible radial dispersion of birds from Lough Neagh, the major roost/staging site in the area, resulting in generally north to south movements, that is, sub-parallel with the proposed overhead line route in the vicinity of the river crossing. It has been suggested that lines oriented parallel to flight direction are a factor in reducing collision potential at a site (Scott *et al* 1972). Swans heard but not seen on 05.12.06 were also probably moving southwards, perhaps following the line of the Ballymartrim River floods.

The low relief in the area to the south of Lough Neagh is unlikely to present a significant obstacle to swan movements, and the east to west alignment of the river around the proposed crossing point is not sufficiently attractive to cause most swans to deviate from a preferred north – south flight direction. Following the low level of swan activity recorded during this survey, consultation with NIEA concluded that any putative significant use of the valley as a leading line in the vicinity of the crossing was unlikely. Further surveys of the crossing were therefore considered to be of limited value.

Use of Overhead Line Route by foraging whooper swans

Observations along the line of the Proposed Development did not produce any records of feeding swans along the route. This is in accord with the NIEA whooper swan database, which uses IWSSG notation for known sites (Figure 1 - 15). Swans may use non-traditional feeding sites on occasion, but such use is generally temporary and may reflect exceptional circumstances such as sudden weather change. It is therefore unlikely that swans would be at significant collision risk as a result of regular use of sites in the immediate vicinity of the Proposed Development. It may also be relevant that there are few sizable water bodies within around 4km of the proposed route that would be suitable as roost sites for significant numbers of swans.

Powerline collision is the most frequently reported cause of death of swans in the United Kingdom (Brazil 2003). Although whooper swans are able to accommodate the close proximity of overhead lines to both roosting and feeding sites, it is likely that at some point or points in time whooper swans will collide with the proposed overhead line. The Icelandic breeding population that is the source of the greatest part of the whooper swan population wintering in Ireland is currently increasing (Wetlands International 2012). Adverse effects at the population level have been modelled to require annual removal of greater than 3% of a population of whooper swans that is increasing at its present rate, in addition to the mortality that is occurring at present (Trinder 2012). Any mortality associated with the new line is therefore highly unlikely to have a significant effect on whooper swan populations at either a local or a national level. However, the potential for cumulative effects should be considered, as a greater volume of airspace becomes unavailable for safe passage of swans and other bird species as the number of overhead lines increases. Birds may be able to see the thicker conductor wires and, in attempting to avoid them, collide with the less visible earth wire (Haas *et* al 2005). It has been suggested that a precautionary approach should be taken, and that all new overhead lines should be fitted with appropriate bird deflectors as routine best practice (Frost 2008). Annual losses of mute swans (*Cygnus olor*) at Abberton Reservoir SPA were reduced to near zero with the fitting of deflectors.

Potential for whooper swans foraging in the Blackwater River valley to commute across the proposed Overhead Line Route

Whooper swans continued to use sites in the Blackwater River valley as wintering grounds during winter 2010/11 in broadly comparable numbers to those recorded in winters 2006/07 to 2008/09. Temporary absences from traditional wintering sites and occasional relatively large numbers of birds may reflect disruption of 'normal' distribution patterns arising from the prolonged cold spell of November to January.

There is no indication of the routes that birds use when they migrate to and from their wintering sites in the Blackwater River valley, nor of routes that might be used by birds that respond to harsh weather conditions by onward movements in search of more hospitable feeding sites. Lough Neagh/Beg is a major wintering/staging site that may be the immediate

source of birds wintering in the study area, and it is likely that birds moving onward from Lough Neagh to wintering sites follow routes that radiate from this site. Birds that winter at Derryscollop are likely to fly parallel with the Proposed Development, with a consequent low collision risk for birds undertaking this movement. Derryscollop has been shown by ring-reading of marked individuals to be directly linked to sites on Lough Neagh (Robinson et al 2004), and birds using this site may be viewed as part of the Lough Neagh wintering population. Flightlines between Lough Neagh and Derryscallop are to the east of the proposed overhead line, and there is unlikely to be a conflict between the line location and swan utilisation of the Derryscallop site. Birds occasionally also use wetlands at Clonbeg, around 2km to the north west of Derryscallop, between the Blackwater River and the proposed substation site. These birds are also likely to be based on Lough Neagh, exploiting floods as they occur, and flightlines again are located to the east of the proposed works.

Birds arriving to winter in the Blackwater River valley from staging areas to the north may fly parallel to the proposed overhead line, but there is also a potential for birds to overfly the northern part of the overhead line route during onward or return movements from or to Lough Neagh. It is unlikely that birds follow the course of the Blackwater, since the low relief of the local landscape is unlikely to be sufficient to provide leading lines for the swans. Observations during the 2006-2009 suggested that swans only follow the river occasionally and perhaps coincidentally. It should be noted that a high voltage overhead line, immediately to the north of the proposed substation, lies perpendicular to the putative route between Lough Neagh and the Blackwater River valley. There is no evidence that this line acts as a barrier or significant collision risk to swans, and birds that are flying above the height of the existing line are also likely to fly above the height of the proposed line, which follows the lower lying ground between drumlins in this area.

Alternatively, birds may use a more direct route to the Blackwater River valley from their initial arrival areas on the north coast. This direct route would take birds to the west of the overhead line route, with a consequent absence of collision risk. Return movements in spring may involve stopovers at staging sites, and birds may use Lough Neagh, move directly to Lough Foyle/Swilly or overfly these sites and continue northwards. The spatial relationship between migration routes and the proposed overhead line route will clearly vary as the migration strategy of individual birds varies. A satellite study of whoopers leaving wintering sites in England indicated a mean flight altitude of 74m over land (Griffin et al. 2010). Although this study was clearly specific to the routes used by the study populations, there is a suggestion that migrating swans are likely to fly above the height of the proposed towers.

This study confirmed the use of roosting sites within the Blackwater River valley by birds that forage in the valley. Feeding sites upstream of Benburb are likely to function as a single site complex, with birds shifting between individual sites as circumstances (disturbance, presence/absence of floods, changes to foraging opportunities, freezing of roost sites) dictate. The closest IWSSG site to the proposed line route is in the vicinity of Edenderry Lough, approximately 1km to the west of the route. No birds were recorded at this site during the total of 41 visits undertaken during 2006-09 and 2010/11. It is likely that this site is used intermittently at most at present. Enagh Lough was confirmed as an important roost site for birds in the southern part of the valley, attracting birds from Kedew Road (3.5km to the north) and Ballymacully Road (2km to the east).

Birds using this southern part of the valley may be regarded as a distinct sub-population, both feeding and roosting within the area, although joined by small numbers of additional birds at times. Results from this survey support Robinson *et al* (2004) who suggested that swans using the Blackwater River valley feeding sites form a discrete wintering population, which moves between the various sites recorded in this study, and may use a winter range that extends along the valley into Co Monaghan. Birds using this part of the valley are therefore unlikely to approach the proposed overhead line route (>4km to the east) during their diurnal winter cycle

Temporary water bodies were also used as roosts as the opportunity arose, and birds feeding on floods at Annaghroe and Derryscollop remained at these sites overnight when floods were extensive. These two sites also attracted birds from elsewhere on occasion. Birds from

Ballymacully Road (3.5km to the north east) used Annaghroe when Enagh Lough was frozen, and small numbers of birds which apparently used feeding sites in Co Monaghan also roosted at Annaghroe, perhaps because their regular roost was also frozen. Alternatively, these may be birds that use feeding sites on both sides of the border. The use of Annaghroe by birds feeding in Co Monaghan supports the idea that the site complex that is used by birds in the Blackwater River valley extends to feeding areas in Monaghan. Small numbers of birds (16 in total) also dropped in to Derryscollop to join the feeding/roosting flock there on one occasion. Arrival directions indicated that these birds originated to both the north and south of the site.

The use of some sites as feeding grounds appeared to be determined largely by the presence and extent of flood waters, while at others the presence of floods as safe roost sites was likely to be a factor in the number of birds using traditional feeding grounds. The maximum number of swans using the Blackwater River valley feeding grounds was 177 birds on 15.11.10, when birds were dispersed among four sites in the valley. This compares with a maximum count of 80 birds spread over three sites recorded over the winters 2006/07- 2008/09. This is a small proportion of the wintering population centred on Lough Neagh/Lough Beg, where the highest winter count has been1,803 in January 2010 (Hall *et al* 2012). It is likely that rather more birds use Lough Neagh/Lough Beg over a winter, as birds move on to or return from wintering sites elsewhere in Ireland. None of the individual feeding sites in the Blackwater River valley has supported numbers (a minimum of 130 birds) that are of all-Ireland or international significance in recent years (Holt *et al* 2011). It should be noted that the importance rating depends on counts over five consecutive winters, and numbers between winters are likely to fluctuate, depending on a variety of factors that include breeding success, disturbance, extent and duration of floods, weather conditions and off-site factors. However, there are no historic records that suggest that the valley has held sufficient birds to reach the national significance threshold.

Potential for whooper swans using the Keady lakes to cross the proposed overhead line route.

Swans continued to use the Keady lakes in 2010-11, at times in larger numbers than those previously recorded, and in larger numbers than the 20 or so birds suggested by Robinson *et al* (2004) as being regular on the lakes.

Birds using fields around the Keady lakes as feeding grounds are likely to use the lakes as roosts. The lakes are extensive, and provide security from the mammalian predators that are likely to be the greatest nocturnal risk for this species. Birds are able to feed near the lakesides and walk into the lakes to roost, as was recorded at both Clay Lake and Tullynawood Lake, and there are therefore no flightlines to consider in these circumstances.

Sightings of ringed birds confirm that birds regularly use the same sites between winters, although there may also be an element of wandering in the general area within winters (McElwaine et al. 1995). The extent of these wanderings is not known, and is likely to vary considerably between individuals, but for the two birds noted, sightings have always been to the east of the proposed overhead line route. Some birds seen in Co Armagh (including Birds KPZ and 55J) may also use the sites in Co Monaghan identified by Robinson *et al* (2004) at Lough Egish, Lough Laragh and Muckno Mill Lough as supporting wintering flocks of 20-60 birds. This extended area may be considered as a complex of sites that may be used by a local population of birds to different extents and at different times through a winter. The boundary of any proposed complex must be regarded as porous, with 'leakage' across the boundary by individuals or groups of birds into adjacent sites and site complexes. It is thus possible that birds may wander between sites on either side of the proposed overhead line route in Co Monaghan. The extent of this leakage as it affects birds that use the Keady lakes is likely to decline with distance from the lakes, as it is clear that as well as a propensity to wander, birds also show a considerable degree of site fidelity, both within and between winters (Black & Rees 1984).

Sightings of ringed birds show that although individual birds may wander within their general wintering area, they also spend significant periods of time at particular sites. The use of sites

as both feeding and roosting sites reduces the opportunity for overhead line collision risk over the winter, as birds are unlikely to use the airspace that it is proposed will be occupied by the proposed overhead lines during those periods. The availability of secure roost sites adjacent to feeding grounds also reduces the need for birds to commute to roosts further afield. Birds that use feeding sites around the Keady lakes are unlikely to undertake the greater than 10km flight to roost on lakes that are to the west of the proposed overhead route in Co Monaghan.

The overall pattern of within winter movements of whooper swans that use the Keady lakes as inferred from direct observation and from consultation is likely to comprise the following components:

- While birds are actually using the lakes as feeding sites, they also use them as roosts;
- An unknown proportion of birds that use the Keady lakes also uses feeding and/or roost sites in Co Monaghan for part of at least some winters;
- There is a potential for some birds to use feeding sites beyond the local (Keady lakes/Monaghan border) site complex; and
- 'Normal' distribution patterns and behaviour may be disrupted as a result of severe weather, with birds absent from the Keady lakes at times.

Bewick's swan

Bewick's swan is now a scarce visitor to Northern Ireland as a whole, and there were only two records of the species during the study winters. The sporadic appearance of this species in very small numbers reflects the withdrawal eastwards of its core wintering range (Crowe *et al* 2005) and there is likely to be little potential for interaction between Bewick's swan and the proposed overhead line.

Greenland white-fronted goose

Annaghroe (site RB06) was formerly used by a significant number of this species, but the site has been relatively little-used in recent years. The species is Amber-listed because >20% of the NW European non-breeding population occurs in the UK and >50% of the non-breeding population occurs in 10 or fewer sites. It has previously been shown that birds from Annaghroe commute to Slieve Beagh (to the west of the proposed line route) to roost (I. Enlander, NIEA, pers comm), and these movements would not therefore bring birds into the immediate vicinity of the proposed overhead line.

Conclusions

None of the flightlines between feeding and roosting sites recorded during this study crossed the proposed overhead line route, and birds that winter in the Blackwater River valley will not be at risk of collision during regular movements between these sites. Birds that winter at the Keady lakes are likely to roost at the lakes, and there is unlikely to be a collision risk for these birds while they are in residence at the lakes. Birds may wander between feeding sites within a wider area, but the extent of this winter ranging is likely to vary individually. There may be a potential for some birds to cross the overhead line route in Co Monaghan. The probability that birds that use the Keady lakes will do so is a function of site faithfulness on the one hand, and propensity for some birds to wander on the other, and is likely to decline with distance from the lakes.

There is currently no evidence of the routes that swans use when entering or leaving the wintering areas, but movements may take place between Lough Neagh and the areas under consideration. Movements between staging posts to the north and sites at Derryscollop and the Keady lakes are unlikely to be affected by a significant collision risk, due to the orientation of the Proposed Development with respect to flight direction to and from staging sites.

There is a potential for birds undertaking these movements into the Blackwater River valley to cross the proposed overhead line route, particularly towards its northern end. There is no

evidence that existing high voltage lines that lie perpendicular to presumed flightlines have a significant adverse impact on local swan numbers, and the routing of the Proposed Development along relatively low ground between surrounding hills is likely to reduce collision risk for overflying birds. The fitting of bird deflectors along the new overhead line should be considered in accordance with the precautionary principle in order to reduce any potential cumulative impacts on local swan populations.

There will be no landtake of swan feeding grounds or roost sites, and the proposed route is sufficiently remote for there to be little if any impact on swans using the Blackwater River valley or the Keady lakes as wintering sites.

It is concluded that there is unlikely to be a significant risk of collision arising from the Proposed Development at the individual level, and any risks are likely to be largely limited to arrival and departure from the Blackwater River valley at the beginning and end of the winter period. Any collisions that may occur will not have a significant impact at the local or national population level.

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Appendix 10H Article 6 Draft ToLS

Appendix 10H

Test of Likely Significance

1 Introduction

1.1 The Proposed Development

Northern Ireland Electricity (NIE) is seeking consent from the Northern Ireland Department of the Environment (DOE) for a 400,000 volt (400kV) overhead line in Counties Tyrone and Armagh and an associated 275/400kV substation. The overhead line will run from the townland of Turleenan (near Moy), County Tyrone for a distance of approximately 34km to the Republic of Ireland border, crossing at a position between the townlands of Doohat or Crossreagh, County Armagh, and Lemgare, County Monaghan and a 200m oversail section in the Northern Ireland townland of Crossbane. The overhead line, the substation and associated development are referred to as "the Proposed Development."

The total overhead line route length in Northern Ireland is 34.3km.

The Proposed Development forms the Northern Ireland element of the Tyrone-Cavan Interconnector ("the proposed Interconnector"), which is being jointly promoted by NIE and EirGrid[1] and which forms part of a major transmission system development to improve interconnection between the NIE transmission system in Northern Ireland and the ESB[2] transmission system in the Republic of Ireland. The proposed Interconnector extends for a distance of approximately 80 km from the proposed substation at Turleenan to a transmission system node in the vicinity of Kingscourt, County Cavan, and from that point onwards to an existing 400kV substation at Woodland Co. Meath, such that the overall interconnection development will extend for a total distance of approximately 140km. Separate planning applications for those elements of the Interconnector within Northern Ireland and within the Republic of Ireland are being submitted, by NIE and EirGrid respectively, to the competent authorities in each jurisdiction.

Planning permission for the section of overhead line, proposed substation and associated works within Northern Ireland (including temporary access tracks required to facilitate construction) is being sought under the Planning (Northern Ireland) Order 1991. The Proposed Development has been formally submitted to DOE as two planning applications – the original application (O/2009/0792/F) and the associated works application (O/2013/0214/F).

Because of the location and nature of the Proposed Development, it is required to provide an assessment under The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) of the potential impacts to European protected sites or Natura 2000 sites. These sites are Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The Conservation Regulations enact the European Commission Habitats Directive (92/43/EEC) of the possible impact on European protected sites.

Due to the size of the Proposed Development and its possible impacts to wildlife in the area (specifically bird strikes), an Article 6 Test of Likely Significance is required for the Proposed Development for all the European protected sites within a 30km buffer zone[3] around the Proposed Development. In Northern Ireland, Ramsar sites are recommended for inclusion by planning advice in Northern Ireland[4].

[1] EirGrid is the company responsible for planning and operation of the electricity transmission system in the Republic of Ireland.
[2] The Electricity Supply Board (ESB) is the company responsible for ownership and maintenance of the transmission system in the Republic of Ireland.
[3] The Design Manual for Roads and Bridges provided an assessment framework for roads scheme which are also large scale linear features in the landscape, however Volume 11, Section 4, Part 1, HD44/09 recommends a 30km buffer for SACs and SPAs designated because of their bat populations (a species impacted by roads) which this scale buffer is being used for bird populations (a species impacted by overhead power lines).
[4] Planning Policy Statement 2 Planning and Nature Conservation (PPS 2) (DoE, 1997)

1.2 Protected Sites

A total of 15 designations on ten Natura sites (multiple designations on several sites) have been identified within the 30km buffer (see Figure 1). The nine sites were examined to assess if there are any potential impacts to the sites or their qualifying features as a result of the Proposed Development, in terms of construction or operation. The results are shown in Table 1.

Table 1: Natura sites within 30km of the Proposed Development

Name of Site	Designation	Distance from the Proposed Development	Designation Feature	Potentially impacted by the Proposed Development
Black Bog	SAC	29.70 km to line route	Active Raised Bog	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.
	Ramsar	29.85 km to line route	The site is a large and relatively intact example of a lowland raised bog and one of the best examples of the habitat in the UK.	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.
Upper Ballinderry River	SAC	25.86 km to line route	Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitrocho-Batrachion* vegetation/ presence of freshwater pearl mussels *Margaritifera margaritifera*	No, the site is in a different catchment to the Proposed Development and is hydrologically isolated from the Proposed Development.

Table 1: Natura sites within 30km of the Proposed Development				
Name of Site	Designation	Distance from the Proposed Development	Designation Feature	Potentially impacted by the Proposed Development
Lough Neagh and Lough Beg	SPA	8.27 km to substation 8.59 km to line route	During the breeding season the area regularly supports *Sterna hirundo*. Over winter the area regularly supports *Cygnus columbianus bewickii*, *Cygnus cygnus*. Over winter the area regularly supports *Aythya farina*, *Aythya fuligula* and *Bucephala clangula*. Over winter the area regularly supports 99,262 waterfowl.	The site contains migrating species which may come into contact with the Proposed Development during operation.
	Ramsar	3.52 km to substation 3.98 km to line route	A particularly good representative example of natural or near-natural wetlands, common to more than one biogeographic region. 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.	Waters from the Blackwater River, which is crossed by the proposed overhead line, and its catchment discharge into the site.

Table 1: Natura sites within 30km of the Proposed Development				
Name of Site	Designation	Distance from the Proposed Development	Designation Feature	Potentially impacted by the Proposed Development
Kilroosky Lough Cluster	SAC	28.64 km to line route	The site has been listed due to the presence of three Annex 1 habitats, hard water marl lakes (priory habitat), calcareous and alkaline fen vegetation and the Annex 2 species, White clawed Crayfish.	No, the site is in a different catchment to the Proposed Development and is hydrologically isolated from the Proposed Development.
Peatlands Park	SAC	4.25 km to substation 4.55 km to line route	Degraded raised bogs still capable of natural regeneration /bog woodland	No, the site is remote from the Proposed Development, upslope from the river, and will not be affected by the Proposed Development on the river waters.
Montiaghs Moss	SAC	23.92km to the line route	Marsh fritillary butterfly Euphydrayas (*Eurodryas, Hypodrayas aurinia)*	No, the designation feature will not be impacted as a result of the Proposed Development because it does not migrate and the supporting habitat is remote from the Proposed Development and its associated effects.
Magheraveely Marl Loughs	SAC	23.94 km to line route	Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp./Alkaline fens/white clawed crayfish	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.

Table 1: Natura sites within 30km of the Proposed Development				
Name of Site	Designation	Distance from the Proposed Development	Designation Feature	Potentially impacted by the Proposed Development
	Ramsar	23.98 km to line route	A combination of hard water and low nutrient status has produced loughs that approach the classic marl lake condition. In addition they are surrounded by wetlands whose interest is also proposed by high calcium concentration. Biological interest is related to the present of vegetation which reflects these calcareous conditions, including rich and extensive stonewort (*charophyte*) communities with several rare and local species, including *Chara aspera, C.curta, C. hispida. C. pendunculata and C. rudis.*	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.
Slieve Gullion	SAC	23.83 km to line route	European Dry Heath	No, the site is at a higher altitude than the proposed construction works, and there is no impact vector present.
Slieve Beagh – Mullaghfad – Lisnaskea**	SPA	23.31 km to line route to the section	During the breeding season the area regularly supports *Circus cyaneus*.	No, given the distance from the Proposed Development there will be no impact to breeding season *Circus cyaneus*.

Table 1: Natura sites within 30km of the Proposed Development				
Name of Site	Designation	Distance from the Proposed Development	Designation Feature	Potentially impacted by the Proposed Development
Slieve Beagh	SAC	24.44 km to line route	Natural dystrophic lakes and ponds/blanket bogs	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.
Slieve Beagh	Ramsar	25.12 km to line route	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 site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.
Deroran Bog	SAC	29km to line route	A typical western raised bog of the Northern Ireland drumlin belt	No, the site is in a different catchment to the works and is hydrologically isolated from the Proposed Development.

* Eshbrack Bog Natural Heritage Area (NHA) is directly adjacent to the Slieve Beagh site. It is designated as a NHA because of extensive upland blanket bog. For the purposes of this assessment, the Eshbrack Bog has been included within the assessment of the Slieve Beagh SAC, SPA and Ramsar sites.

1.3 Alone and In Combination

The assessment requires that any other existing or proposed plans that may affect the protected sites are considered in combination with the Proposed Development. The proposed EirGrid Interconnector is not yet a committed development. There are no other committed developments alone and/or in combination which would have an impact on the protected sites.

No planning application has been formulated or submitted by EirGrid for the portion of the Tyrone-Cavan Interconnector within the Republic of Ireland and the form of their proposals is as yet undetermined. In circumstances in which EirGrid has yet to conclude its public consultation exercise and EirGrid's proposed development has yet to crystallise sufficiently for NIE to conduct such a cumulative impact assessment, NIE is unable to conduct a cumulative impact assessment as part of this ES. However, once EirGrid's proposal has

crystallised sufficiently, this will be done. The current status of the EirGrid project (as of April 2013) can be view on the EirGrid website (www.eirgrid.com) in the documents "North South 400kV Interconnection Development: Preliminary Re-evaluation Report (May 2011) and "Final Re-evaluation Report" (April 2013).

1.4 Transboundary Impacts

The following sites are located in, or partially within, the Republic of Ireland:

- Slieve Beagh SPA, SAC and Ramsar;
- Eshbrack Bog NHA;
- Magheraveely Marl Lough/Kilroosky Lough Cluster SAC.

As a result, the National Parks and Wildlife Service (NPWS) has been included in the consultation of this document, along with the Northern Ireland Environment Agency (NIEA).

1.5 Pre document submission consultation

The information used to complete this assessment has been gathered over a number of years, during which consultation with both NIEA and the Irish Whooper Swan Study Group (IWSSG) has occurred numerous times. The discussions with NIEA have been aimed at developing a robust survey methodology the results of which will allow NIEA to consider the likely impact of the Proposed Development of natural heritage features within the wider area (thus fulfilling their statutory obligations), in this case over wintering whooper swans. The IWSSG have been consulted and assisted with the baseline data gathering exercise for the whooper swan feeding and locations to the south of the Ramsar and SPA sites, and adjacent to the Proposed Development.

2 Test of Likely Significance

Of the 15 designations within 30km of the Proposed Development (see Table 1), 13 were ruled out of the assessment because they do not have designation features which will be impacted by the Proposed Development or their location will not result in any impact.

The two designations which will be subject to assessments are:

- Lough Neagh and Lough Beg Ramsar site; and,
- Lough Neagh and Lough Beg SPA site.

NIEA require that the findings of the Article 6 Test of Significance Assessment for the Proposed Development should be reported using the templates provided in 'Assessment of plans and Proposed Developments significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Brussels, November 2001'. The following Tables outline the findings of the Test of Likely Significance in the suggested format:

- Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site;
- Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site;
- Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA; and.
- Table 5 – Habitats Directive Finding of No Significant Effects Matrix : Lough Neagh and Lough Beg SPA

Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site	
The Proposed Development	The Proposed Development, which is described from north to south, shall involve the following: - The construction and operation of a new 275kV/400kV (source) substation at Turleenan townland, north east of Moy, County Tyrone. This is the nearest approach to the Ramsar site, which is 8.6km to the north east. - The construction and operation of two 275kV terminal towers, removal of an existing 275kV tower, and associated works to enable connection of the Turleenan substation to NIE's existing 275kV overhead line. - The provision of a settlement pond (approximately 80m long by 14m wide) at the substation site to provide sustainable drainage (SuDS) treatment of runoff from the site. - The construction and operation of a single circuit 400kV overhead transmission line supported by 102 towers for a distance of some 34.1km from the source substation (at Turleenan) to a border crossing between the townlands of Doohat or Crossreagh, County Armagh and Lemgare, County Monaghan, where it will tie into the EirGrid Interconnector. The overhead line will continue on in the Republic of Ireland with all further towers being proposed by EirGrid for placement within that jurisdiction. However, owing to geographic border definitions in the immediate area of the border crossing, there will be a 200m short section of line over sail in the Northern Ireland townland of Crossbane. - The formation of temporary access tracks and other ancillary works during construction of the substation and at each of the tower locations.
Brief Description of the Natura 2000 Site	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 *Mysis relicta*, eight beetles, five hoverfiles, 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;

Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site	
	internationally important numbers of wintering Bewick's and whooper swans; nationally important numbers of breeding common tern; and a population of pollan
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 Natura 2000 site.	The operation of the Proposed Development will not impact the Natura 2000 site or alter the habitats within its boundary. The substation and tower locations has been sited and designed to minimise all emissions to water resulting from the Proposed Development. This includes any potential dewatering which may have to be undertaken during preparations for the laying of foundations for the substation or towers. The Proposed Development has been assessed for its water quality implications (surface and groundwater). In relation to the substation site, the proposed drainage system will provide multiple barriers to treat runoff before it is discharged from the site. In the event of an extreme flood event, the location of the pond will not be subject to high velocity flood waters as, due to the distance from the main rivers the floodplain function is predominantly for storage and not conveyance, therefore, the potential for any mobilisation is minimal. In addition, the impact from the pond in a 1-in-100 year flood event is considered to be insignificant. If material was mobilised under storm conditions, the receiving watercourse will also be in spate and will have elevated suspended sediment concentrations. Any contaminants that are mobilised from the treatment wetland / pond will be rapidly dispersed, short term and are very unlikely to become bio-available to aquatic organisms. It has been concluded that with pollution control as an integral part of the site Environmental Management Plan, any emissions to water from either surface or groundwater sources will be minimal. Any potential for any impacts on the Lough waters, 8.6km to the north east, is negligible. Potential impacts on Ramsar 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. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines.
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 Natura 2000 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 landtake from the Ramsar site.

Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site	
Distance from the Natura 2000 site or key features of the site	The Proposed Development is approximately 8.6km to the south west of the Ramsar Site. Whooper swans 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 on two occasions in the past 5years under overhead lies at Clonbeg, around 1km to the east of the proposed pond location.
Resource requirements (water abstraction etc)	No abstraction will take place as a result of the Proposed Development.
Emissions (disposal to land, water or air)	Potential impacts to the Ramsar site have been minimised through appropriate tower and substation siting, however accidental emissions to water may occur as a result of the construction of the Proposed Development. In all cases the potential for dewatering and accidental emissions have been examined and the pollution control measures to address these issues are an integral part of the site Environmental Management Plan. Therefore any impact on receiving waters >8km downstream are not considered significant.
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. Pollution control is an integral part of the Construction Environmental Management Plan (CEMP).
Transportation requirements	The management of the transport of excavated material will take place according to the CEMP. Plant and materials will be delivered to site (substation and tower sites) by lorry.
Duration of construction, operation, decommissioning etc	It is anticipated that the longest period of construction would be for the overhead line part of the Proposed Development. This will take 2 to 3 years to complete.
Other	It is anticipated that once the Proposed Development has been built, as infrastructure, it would not be decommissioned.
Describe any likely changes to the site arising as a result of:	
Reduction in habitat area;	The Proposed Development will not lead to any reduction in habitat areas in the Ramsar site.
Disturbance to key species;	The Proposed Development will not lead to the disturbance of any of the key species.
Habitat or species fragmentation;	There will be no habitat or species fragmentation as a result of the Proposed Development.

Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site	
Reduction in species density;	No reduction in species density is anticipated.
Changes in key indicators of conservation value (water quality etc);	Although there is potential for minor accidental discharges of, mainly silt no changes to the key indicators of conservation value will occur. Silt precipitated into the substation SuDS pond will be retained as pond floor sediment. Accumulations will be cleaned out on a regular basis to prevent weather induced perturbation into the water column and potential overflow into watercourses.
Climate change.	The Proposed Development will have a no significant impact on climate change in terms of emissions as a result of construction activities. One of the main reasons that this development is required is to support the development of renewable power generation – by strengthening the flexible exchange of power flows over a large area of the island of Ireland. This will enable the connection and operation of larger volumes of renewable power generation (especially wind-powered generation) throughout the island and in turn help to facilitate meeting targets for renewable generation.
Describe any likely impacts on the Natura 2000 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. It is not anticipated that the Proposed Development will impact the key relationships that define the structure or function of the site). A series of wintering bird surveys conducted over 3 years monitored the movements of birds within the Blackwater Valley and concluded that the overhead line does not present a significant risk to the whooper swans population in the valley. Please refer to the report for greater detail.
Provide indicators of significance as a result of the identification of effects set out above in terms of:	
Loss;	Loss: The Proposed Development will not lead to a loss of any of the Ramsar area and does not involve any landtake of the site.
Fragmentation;	The Proposed Development will not result in any fragmentation of relevant habitats or populations.
Disruption;	Disruption: The implementation of the Proposed Development, will not cause any significant disruption to relevant habitats or populations within the Ramsar site.

Table 2 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg Ramsar Site	
Disturbance;	Disturbance: As a result of the implementation of the Proposed Development, significant disturbance to relevant habitats or populations within the Ramsar site will not occur.
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 main element of potential concern with regard to the designation 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 Proposed Development (Blackwater River valley, Derryscollop, Keady Lakes) may overfly the proposed overhead line route. Individual birds may be at risk of collision, but this is not considered to be a significant risk at the population level to this designation feature of the Ramsar Site. In accordance with the Habitats Directive (92/43/EEC) the probable impacts from the Proposed Development has been assessed and it has been concluded **that no significant impacts on the selection features of the Lough Neagh and Lough Beg Ramsar Site are anticipated as a result of the Proposed Development**.

Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site	
Name of the project or plan	Tyrone-Cavan Interconnector (the Proposed Development)
Name and location of the Natura 2000 (Ramsar) site	Lough Neagh and Lough Beg Ramsar Site
Description of the project or plan	The Proposed Development, which is described from north to south, shall involve the following: The construction and operation of a new 275kV/400kV (source) substation at Turleenan townland, north east of Moy, County Tyrone. The provision of a settlement pond (approximately 80m long by 14m wide) at the substation site to provide SuDS treatment of runoff from the site The construction and operation of two 275kV terminal towers, removal of an existing 275kV tower, and associated works to enable connection of the Turleenan substation to NIE's existing 275kV overhead line. The construction and operation of a single circuit 400kV overhead transmission line supported by 102 towers for a distance of some 34.1km from the source substation (at Turleenan) to a border crossing between the townlands of Doohat or Crossreagh, County Armagh and Lemgare, County Monaghan, where it will tie into the EirGrid Interconnector. The overhead line will continue on in the Republic of Ireland with all further towers being proposed by EirGrid for placement within that jurisdiction. However, owing to geographic border definitions in the immediate area of the border crossing, there will be a 200m short section of line over sail in the Northern Ireland townland of Crossbane. The formation of temporary access tracks and other ancillary works during construction of the substation and at each of the tower locations.
Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No
Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?	The proposed EirGrid Interconnector is not yet a committed development but has been included in this assessment as it is connected to the Proposed Development. The border crossing of the proposed EirGrid Interconnector is 32.33km from the most southern part of the Ramsar site and no impact is anticipated because of the proximity of the proposed EirGrid Interconnector to the site.
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.	The project has a potential to affect the Ramsar site during its construction phase, when sediments may be released into a water course leading into the site as a result of tower construction and/or stringing of cables between towers. There is a consequent potential for sediments to be discharged into the site,

Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site	
	with resulting siltation impacts on site features. There is a potential risk of sediment laden water overflowing the SuDS pond and entering watercourses that drain eventually into Lough Neagh, with potential impacts on feeding habitats of designation feature wildfowl. There is a risk of collision with overhead lines for whooper swans that use the Ramsar site if birds cross the line route when arriving at/departing from wintering sites, or when on migration. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines.
Explain why these effects are not considered significant.	Tower bases have been located set back from watercourse banks to minimise the probability of pollution events arising during excavation works. Excavations for the substation will be protected by appropriate measures to prevent discharges to local watercourses. The effects of implementing the Proposed Development are not considered significant because they do not result in any land take from the designated site; any pollutant discharges are considered to be small-scale, and the distance of the project from the site (8.6km) indicates that any discharges will be either deposited before they reach the site, or will be so diluted that they could not cause adverse impacts to the site designation features. The SDS proposed drainage system will provide multiple barriers to treat runoff before it is discharged from the site. In the event of an extreme flood event, the location of the pond will not be subject to high velocity flood waters as, due to the distance from the main rivers the floodplain function is predominantly for storage and not conveyance, therefore, the potential for any mobilisation is minimal. In addition, the impact from the pond in a 1-in-100 year flood event is considered to be insignificant. If material was mobilised under storm conditions, the receiving watercourse will also be in spate and will have elevated suspended sediment concentrations. Any contaminants that are mobilised from the treatment pond will be rapidly dispersed, short term and are very unlikely to become bio-available to aquatic organisms. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines. Whooper swans that use wintering sites in the Blackwater River valley, Derryscollop or Keady Lakes areas are in the main site faithful and have not been observed crossing the proposed line route. There remains the potential for birds to cross the route, particularly when entering or leaving the valley, however due to the population scale on the Ramsar Site designation feature, an adverse impact is not anticipated. A wintering bird survey has been carried out as part of the Environmental Impact Assessment of the Proposed

Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site	
	Development. The resultant report is the Wintering Swan Survey Report. Ramsar Selection Features Test of Significance RAMSAR CRITERION 1 A particularly good representative example of natural or near-natural wetlands, common to more than one biogeographic region. The site is the largest freshwater lake in the United Kingdom. Lough Neagh 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. The Proposed Development is remote from the Ramsar site and habitat features will not be impacted as a result of the Proposed Development. RAMSAR CRITERION 2 Supports an appreciable assemblage of rare, vulnerable or endangered species or sub-species of plant or animal or an appreciable number of individuals of any one of these species. The site supports over 40 rare or local vascular plants which have been recorded for the site since 1970; the most notable are eight-stamened waterwort Elatine hydropiper, marsh pea Lathyrus palustris, Irish lady's tresses Spiranthes romanzoffiana, alder buckthorn *Frangula alnus*, narrow small-reed *Calamagrostis stricta* and holy grass *Hierochloe odorata.* The Lough and its margin are also home to a large number of rare or local invertebrates, including two aquatic and two terrestrial molluscs, a freshwater shrimp *Mysis relicta*, eight beetles, five hoverflies, seven moths and two butterflies. Of the rare beetles recorded two, *Stenus palposus* and *Dyschirius obscurus,* have their only known Irish location around the Lough. The Lough also supports twelve species of dragonfly. Small-scale accidental sediment discharges will be deposited or diluted before reaching the Lough, and will not have a significant impact on terrestrial or aquatic components of the site ecology. RAMSAR CRITERION 3 This site is of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna. The site regularly supports substantial numbers of individuals from particular groups of waterfowl which are indicative of wetland values, productivity and diversity. In addition, this site is of special value for maintaining the genetic and ecological diversity of Northern Ireland because of the quality and peculiarities of its flora and fauna. A large number of plants and animal species are confined or almost confined to this area within Northern Ireland.

Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site	
	The Proposed Development is remote from the Ramsar site and habitat and species features will not be impacted as a result of the Proposed Development. RAMSAR CRITERION 4 This site is of special value as the habitat of plants or animals at a critical stage of their biological cycles. The site supports an important assemblage of breeding birds including the following species with which occur in nationally important numbers: great crested grebe *Podiceps cristatus*, gadwall *Anas strepera*, pochard *Aythya ferina*, tufted duck *Aythya fuligula*, snipe *Gallinago gallinago* and redshank *Tringa totanus*. Other important breeding wetland species include shelduck *Tadorna tadorna*, teal *Anas crecca*, shoveler *Anas clypeata*, lapwing *Vanellus vanellus* and curlew *Numenius.arquata*. The Proposed Development is remote from the Ramsar site and habitat/species features will not be impacted as a result of the Proposed Development RAMSAR CRITERION 5 Assemblages of international importance: Species with peak counts in winter: 86639 waterfowl (5 year peak mean 1998/99-2002/2003) Small-scale accidental sediment/pollutant discharges will be deposited or diluted before reaching the Lough, and will not have a significant impact on the waters that support the waterfowl assemblage. RAMSAR CRITERION 6 Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation): Species with peak counts in spring/autumn: Tundra swan , *Cygnus columbianus bewickii*, NW Europe 26 individuals, representing an average of 0.1% of the all-Ireland population (5 year peak mean 1998/9-2002/3) Species with peak counts in winter: Whooper swan , *Cygnus cygnus*, Iceland/UK/Ireland 1523 individuals, representing an average of 7.2% of the population (5 year peak mean 1998/9-2002/3) Common pochard , *Aythya ferina,* NE & NW Europe 20279 individuals, representing an average of 5.7% of the population (5 year peak mean 1998/9-2002/3) Tufted duck, *Aythya fuligula*, NW Europe 17807 individuals, representing an average of 1.4% of the population (5 year peak mean 1998/9-2002/3) Greater scaup , *Aythya marila marila*, W Europe 3377 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-

Table 3 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg Ramsar Site			
	2002/3) Common goldeneye , *Bucephala clangula clangula*, NW & C Europe 6645 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3) Small-scale accidental sediment/pollutant discharges will be deposited or diluted before reaching the Lough, and will not have a significant impact on the waters that support the waterfowl assemblage. Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in spring/autumn: Great cormorant *Phalacrocorax carbo carbo*, NW Europe 1628 individuals, representing an average of 1.3% of the population (5 year peak mean 1998/9-2002/3) Mute swan *Cygnus olor*, Britain 1874 individuals, representing an average of 4.9% of the population (5 year peak mean 1998/9-2002/3) Small-scale accidental sediment/pollutant discharges will be deposited or diluted before reaching the Lough, and will not have a significant impact on the waters that support the species under consideration.		
List of agencies consulted: provide contact name and telephone or email address.	JNCC website, Proposed Development information for the published EIA. I.Enlander (NIEA) consulted with regard to survey requirements.		
Response to consultation	None.		
DATA COLLECTED TO CARRY OUT THE 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?
AECOM	JNCC and reports prepared as part of the EIA of the Proposed Development (see the Tyrone – Cavan Interconnector ES).	Screening	Draft assessment published as part of the Consolidated ES. For further details, please see: http://www.nie.co.uk/majorprojects/index.htm

Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA

Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA	
The Proposed Development	The Proposed Development, which is described from north to south, shall involve the following: - 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, removal of an existing 275kV tower, and associated works to enable connection of the Turleenan substation to NIE's existing 275kV overhead line. - The provision of a settlement pond (approximately 80m long by 14m wide) at the substation site to provide SuDS treatment of runoff from the site. - The construction and operation of a single circuit 400kV overhead transmission line supported by 102 towers for a distance of some 34.1km from the source substation (at Turleenan) to a border crossing between the townlands of Doohat or Crossreagh, County Armagh and Lemgare, County Monaghan, where it will tie into the EirGrid Interconnector. The overhead line will continue on in the Republic of Ireland with all further towers being proposed by EirGrid for placement within that jurisdiction. However, owing to geographic border definitions in the immediate area of the border crossing, there will be a 200m short section of line over sail in the Northern Ireland townland of Crossbane. - The formation of temporary access tracks and other ancillary works during construction of the substation and at each of the tower locations.
Brief Description of the Natura 2000 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 *Aythya farina*, Tufted Duck *A. fuligula*, Scaup *A. marila,* Goldeneye *Bucephala clangula*, Bewick's Swan *Cygnus colmubianus bewickil*, Whooper Swan *Cygnus cygnus*, Common Tern *Sterna hirundo.*
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 Natura 2000 site.	The operation of the Proposed Development will not impact the Natura 2000 site or alter the habitats within its boundary. The substation and tower locations has been sited and designed to minimise all emissions to water resulting from the Proposed Development. This includes any potential dewatering which may have to be undertaken during preparations for the laying of foundations for the substation or towers. The Proposed Development has been assessed for its water quality implications (surface and groundwater). It has been concluded that with pollution control as an integral part of the site Environmental Management Plan, any emissions to water from either surface or groundwater sources will be minimal. The potential for any impacts on the Lough waters, 8.6km to the north east, is negligible. 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. There is a potential for the SuDS pond

Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA	
	to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines.
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 Natura 2000 site by virtue of:	
Size and scale	While the size of the Proposed Development is quite large, none of the works will take place within the SPA boundary.
Land-take	There will not be any landtake from the SPA site.
Distance from the Natura 2000 site or key features of the site	The Proposed Development is approximately 8.6km to the south west 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. 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 on two occasions in the past 5years under overhead lies at Clonbeg, around 1km to the east of the proposed pond location.
Resource requirements (water abstraction etc)	It is not anticipated that any abstraction will take place as a result of the Proposed Development. Potential impacts to the SPA will be confined to accidental emissions to water from the construction of the Proposed Development. Potential impacts to the SPA site will be confined to accidental emissions to water from the construction of the Proposed Development. Potential emissions are silt, discharges from dewatering of the excavations required for tower foundations and small-scale hydrocarbon leaks from plant. All of these impacts have been addressed in the ES via the implementation of detailed mitigation measures and therefore any impact on receiving waters >8km downstream are not considered significant.
Emissions (disposal to land, water or air)	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. In all cases the potential for accidental emissions to water and dewatering of the excavations required for foundations has been examined and the pollution control measures to address these issues are an integral part of the site Environmental Management Plan.
Excavation requirements	The management of the transport of excavated material will take place according to the CEMP. Plant and materials will be delivered to site (substation and tower sites) by lorry.
Transportation requirements	It is anticipated that the longest period of construction will be for the overhead

Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA	
	line part of the Proposed Development. This will take 2 to 3 years to complete.
Duration of construction, operation, decommissioning etc	It is anticipated that once the Proposed Development has been built, as infrastructure, it would not be decommissioned.
Other	None.
Describe any likely changes to the site arising as a result of:	
Reduction in habitat area	The Proposed Development will not lead to any reduction in habitat areas in the SPA site.
Disturbance to key species	The Proposed Development will not lead to the disturbance of any of the key species.
Habitat or species fragmentation	There will be no habitat or species fragmentation as a result of the Proposed Development.
Reduction in species density	No reduction in species density is anticipated.
Changes in key indicators of conservation value (water quality etc)	No changes to the key indicators of conservation value are anticipated. . Silt precipitated into the substation SuDS pond will be retained as pond floor sediment. Accumulations will be cleaned out on a regular basis to prevent weather induced perturbation into the water column and potential overflow into watercourses.
Climate change.	The Proposed Development will have a no significant impact on climate change in terms of emissions as a result of construction activities. One of the main reasons that this development is required is to support the development of renewable power generation – by strengthening the flexible exchange of power flows over a large area of the island of Ireland. This will enable the connection and operation of larger volumes of renewable power generation (especially wind-powered generation) throughout the island and in turn help to facilitate meeting targets for renewable generation.
Describe any likely impacts on the Natura 2000 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. However, surveys have found that birds using the valley are generally site-faithful and are at low risk of collision with the line. It is not anticipated that the Proposed Development will impact the key relationships that define the structure or function of the site.

Table 4 – Habitats Directive Screening Matrix: Lough Neagh and Lough Beg SPA	
Provide indicators of significance as a result of the identification of effects set out above in terms of:	
Loss	The Proposed Development will not lead to a loss of any of the SPA area and does not involve any land take.
Fragmentation	The Proposed Development will not result in any fragmentation of habitats.
Disruption	The implementation of the Proposed Development is not anticipated to cause any significant disruption to designation species/populations of the SPA site.
Disturbance	Disturbance to the SPA site is not anticipated as a result of the Proposed Development.
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.	The main element of potential concern with regard to the designation 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 Proposed Development (Blackwater River valley, Derryscollop, Keady Lakes) may overfly the proposed overhead line route. Individual birds may be at risk of collision, but there is unlikely to be a significant risk at the population level to this designation feature of the SPA. In accordance with the Habitats Directive (92/43/EEC) the probable impacts from the Proposed Development has been assessed and it has been concluded **that no significant impacts on the selection features of the Lough Neagh and Lough Beg SPA Site are likely to occur as a result of the Proposed Development**.

Table 5 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg SPA

Table 5 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg SPA	
Name of the project or plan	Tyrone-Cavan Interconnector (the Proposed Development)
Name and location of the Natura 2000 site	Lough Neagh and Lough Beg SPA
Description of the project or plan	The Proposed Development, which is described from north to south, shall involve the following: - 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, removal of an existing 275kV tower, and associated works to enable connection of the Turleenan substation to NIE's existing 275kV overhead line. - The provision of a settlement pond (approximately 80m long by 14m wide) at the substation site to provide SuDS treatment of runoff from the site. - The construction and operation of a single circuit 400kV overhead transmission line supported by 102 towers for a distance of some 34.1km from the source substation (at Turleenan) to a border crossing between the townlands of Doohat or Crossreagh, County Armagh and Lemgare, County Monaghan, where it will tie into the EirGrid Interconnector. The overhead line will continue on in the Republic of Ireland with all further towers being proposed by EirGrid for placement within that jurisdiction. However, owing to geographic border definitions in the immediate area of the border crossing, there will be a 200m short section of line over sail in the Northern Ireland townland of Crossbane. - The formation of temporary access tracks and other ancillary works during construction of the substation and at each of the tower locations.
Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No
Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?	The proposed EirGrid Interconnector is not yet a committed development but has been included in this assessment as it is connected to the Proposed Development. The border crossing of the proposed EirGrid Interconnector is 36.30km from the most southern part of the SPA site and no impact is anticipated because of the proximity of the proposed EirGrid Interconnector to the site.
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.	The project has a potential to affect the SPA during its construction phase, when sediments may be released into a water course leading into the site as a result of tower construction and/or stringing of cables between towers. There is a consequent potential for sediments to be discharged into the site, with resulting siltation impacts on waterfowl food plants and food species. There is a risk of collision with overhead lines for whooper swans that use the site if birds cross the line route when arriving at/departing from wintering sites, or when on migration.

Table 5 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg SPA	
	There is a potential risk of sediment laden water overflowing the SuDS pond and entering watercourses that drain eventually into Lough Neagh, with potential impacts on feeding habitats of designation feature wildfowl. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines.
Explain why these effects are not considered significant.	Tower bases have been set back from water courses to minimise the risk of pollution events. Excavations for the substation will be protected by appropriate measures to prevent emissions to local watercourses. The effects of implementing the Proposed Development are not considered significant because they do not result in any land take from the site, pollutant discharges are not anticipated to occur. However any accidental spillage, given the distance of the project from the site (8.6km) will be either deposited before they reach the site, or will be so diluted that they could not cause adverse impacts to the site designation features. The proposed SDS drainage system will provide multiple barriers to treat runoff before it is discharged from the site. In the event of an extreme flood event, the location of the pond will not be subject to high velocity flood waters as, due to the distance from the main rivers the floodplain function is predominantly for storage and not conveyance, therefore, the potential for any mobilisation is minimal. In addition, the impact from the pond in a 1-in-100 year flood event is considered to be insignificant. If material was mobilised under storm conditions, the receiving watercourse will also be in spate and will have elevated suspended sediment concentrations. Any contaminants that are mobilised from the treatment pond will be rapidly dispersed, short term and are very unlikely to become bio-available to aquatic organisms. There is a potential for the SuDS pond to attract overflying wildfowl that are elements of the designation population of the Ramsar site, for example whooper swans, which may increase the risk of collision with nearby overhead lines. Whooper swans that use wintering sites in the Blackwater River valley, Derryscollop or Keady Lakes areas are in the main site faithful, and they have not been observed crossing the line route in flocks, however individuals have been observed. These individuals may be at risk of collision, particularly when entering or leaving the valley, but it is not anticipated that they will have an adverse population scale impact on the SPA Site designation feature. SPA Selection Features Test of Significance ARTICLE 4.1 QUALIFICATION (*2009/147/EC*) During the breeding season the area regularly supports: *Sterna hirundo* (Northern/Eastern Europe - breeding) 6% of the all-Ireland

Table 5 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg SPA	
	breeding population Count, as at 1995 Over winter the area regularly supports: *Cygnus columbianus bewickii* (Western Siberia/North-eastern & North-western Europe) 5.4% of the all-Ireland population 5 year peak mean 1991/92-1995/96 *Cygnus cygnus* (Iceland/UK/Ireland) 10% of the all-Ireland population 5 year peak mean 1991/92-1995/96 Recent surveys indicate that the species most at risk from collision, whooper swan, does not routinely cross the overhead line route during the winter months. Potential collisions of individual birds at other times will not adversely affect the population status of the species in the SPA. ARTICLE 4.2 QUALIFICATION (*2009/147/EC*) Over winter the area regularly supports: *Aythya farina* (North-western/North-eastern Europe) 7.5% of the population 5 year peak mean 1991/92-1995/96 *Aythya fuligula*(North-western Europe) 2.2% of the population 5 year peak mean 1991/92-1995/96 *Bucephala clangula* (North-western/Central Europe) 3.6% of the population 5 year peak mean 1991/92-1995/96 It is not anticipated that these species will cross the overhead line route in significant numbers. Their migration routes to Lough Neagh have been recorded as coming from the north and east, and birds therefore do not enter interconnector airspace. ARTICLE 4.2 QUALIFICATION (*2009/147/EC*): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 99262 waterfowl (5 year peak mean 01/04/1998) Including: Cygnus columbianus bewickii , Cygnus cygnus , Aythya ferina, Aythya fuligula , Bucephala clangula . Birds included in this assemblage that routinely use the vicinity of the Proposed Development are restricted to whooper swans, and any risks to this species will not affect the overall assemblage numbers.
List of agencies consulted: provide contact name and telephone or email address.	JNCC website, Proposed Development information for the published EIA. I.Enlander (NIEA) consulted with regard to survey requirements
Response to consultation	None.

Table 5 – Habitats Directive Finding of No Significant Effects Matrix: Lough Neagh and Lough Beg SPA			
DATA COLLECTED TO CARRY OUT THE 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?
AECOM	JNCC and reports prepared as part of the EIA of the Proposed Development (see the Tyrone – Cavan Interconnector ES).	Screening	Draft assessment published as part of the Consolidated ES. For further details, please see: http://www.nie.co.uk/majorprojects/index.htm

Appendix 10l Conservation Status

European Protected Sites Conservation Objectives

Site Name	Designation Type	Distance from site boundary	Description of Site Importance	Conservation objectives
Peatlands Park	SAC	4km NE	Annex I habitats are the primary reason for selection of this site. Annex I habitats include degraded raised bog that is capable of natural regeneration and extensive bog woodland. Active raised bog and oakwood habitats are also present but not primary reasons for designation. The site is remote from the Proposed Development, upslope from the Blackwater River, and will not be affected by any potential impacts of the Proposed Development on the river waters. The site is therefore not considered further.	Currently being produced (JNCC 2011a)
Lough Neagh and Lough Beg	SPA Ramsar	9kmNE	This site qualifies under Article 4.1 of the Directive (79/409/EEC) as an SPA by supporting internationally important numbers of the following species listed on Annex I of the Directive: During the breeding season; Common tern, 185 pairs representing 6.0% of the breeding population in Ireland. Over winter; Bewick's swan, 136 individuals representing 5.4% of the wintering population in Ireland (5 year peak mean 1991/2 - 1995/6) Golden plover, 5,298 individuals representing 2.6% of the wintering population in Ireland (5 year peak mean 1991/2 - 1995/6) Whooper swan 1,031 individuals representing 10.3% of the wintering population in Ireland (5 year peak mean 1991/2 - 1995/6) This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:	Conservation plan currently under review. Conservation objectives are being produced for the following features of interest: • Over-wintering birds - whooper swan, bewick's swan, golden plover, great crested grebe, pochard, tufted duck, scaup, goldeneye and waterfowl assemblage. • Breeding birds -common tern. • Migrating birds- great crested grebe (JNCC 2006a, Lough Neagh Advisory Committee 2002)

Site Name	Designation Type	Distance from site boundary	Description of Site Importance	Conservation objectives
			During the breeding season; Black-headed gull, 33,000 pairs representing 2.0% of the breeding Northwestern Europe - breeding population (1987) Great crested grebe 500 pairs representing at least 1.0% of the breeding Northwestern Europe - wintering population On passage; Great crested grebe, 2,440 individuals representing at least 1.6% of the Northwestern Europe - wintering population (5 year peak mean 1991/2 - 1995/6) Over winter; Goldeneye, 10,776 individuals representing at least 3.6% of the wintering Northwestern/Central Europe population (5 year peak mean 1991/2 - 1995/6) Great crested grebe , 1,821 individuals representing at least 1.2% of the wintering Northwestern Europe - wintering population Pochard, 26,341 individuals representing at least 7.5% of the wintering Northwestern/Northeastern Europe population (5 year peak mean 1991/2 - 1995/6) Scaup, 3,798 individuals representing at least 1.2% of the wintering Northern/Western Europe population (5 year peak mean 1991/2 - 1995/6) Tufted duck, 22,372 individuals representing at least 2.2% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6) The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports an assemblage of waterfowl	

Site Name	Designation Type	Distance from site boundary	Description of Site Importance	Conservation objectives
			totalling 99,221 individual waterfowl. The site is designated as a Ramsar site under criteria 1, 2,3,4,5, 6 and 7. Ramsar criterion 1: The site is the largest freshwater lake in the United Kingdom Ramsar Criteria 2: The site supports over 40 rare or local vascular plants Ramsar criteria 3: A large number of plants and animal species are confined or almost confined to this area within Northern Ireland. Ramsar criteria 4: The site supports an important assemblage of breeding birds including the following species with which occur in nationally important numbers: great crested grebe, gadwall pochard, tufted duck, snipe and redshank Ramsar criteria 5: Site supports an internationally important assemblage of waterfowl with a peak winter count of 86639 individuals over winter. Ramsar criteria 6: Supports populations of the following species occurring at levels of international importance; whooper swan, pochard, tufted duck, greater scaup and common goldeneye. Ramsar criteria 7: Supports a population of *Coregonus autumnalis*, one of the few locations in Ireland and one of the two known locations in the UK.	
Slieve Beagh – Mullaghfad – Lisnaskea	SPA	23km SW	This site qualifies under Article 4.1 of the Directive (79/409/EEC) as an SPA by supporting internationally important numbers of breeding hen harrier. During the breeding season the area regularly supports 10 breeding pairs representing 5.5% of the all-Ireland breeding population. Given the overall distance between the site and the proposed line route, including a considerable distance of poor foraging habitats, there will be no impact on breeding hen harriers and the site is not	To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA (Breeding Hen harrier) (Department of Art, Heritage and the Gaelacht

Site Name	Designation Type	Distance from site boundary	Description of Site Importance	Conservation objectives
			considered further.	2012, JNCC 2006b)
Montiaghs Moss	SAC	24km NE	Annex II species are the primary reason for selection of this site. The site hosts populations of marsh fritillary butterfly. It is not considered that the development will affect this population and so it is not considered further.	Conservation plan currently being reviewed (JNCC 2011b)
Magheraveely Marl Loughs	SAC Ramsar	24km W	Annex I habitats and Annex II species are the primary reason for selection of this site. Annex I habitats hard oligo-mesotrophic waters and alkaline fen habitat are present and are primary qualifying features for site selection, Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* are present but not a primary reason for site selection. Annex II species white clawed crayfish are present and a primary qualifying feature for site selection. Due to its distance from the proposed substation site, the site is hydrologically isolated from the Proposed Development, and is not considered further.	Conservation plan currently being reviewed. Currently, the overall conservation objective is to achieve 'Favourable Conservation Status'. This is Achieved by protecting and where necessary, improving the water or water dependent environment to the extent necessary to achieve favourable conservation status for all the water dependent features for which the protected area is designated. (Department of the Environment Northern Ireland 2009, JNCC 2011c)
Slieve Gullion	SAC Ramsar	24km SW	Annex I habitats are the primary reason for selection of this site. Annex I habitat dry heath habitat is present and a primary feature for site selection. The site is designated as a Ramsar site as an example of one of the best blanket bog habitats in the United Kingdom. The site is in a different catchment to the works, is hydrologically isolated from the Proposed Development and is not considered further.	Conservation plan currently being prepared (JNCC 2011d, Louth County 2011)
Upper Ballinderry River	SAC	26km NW	Annex I habitats and Annex II species are the primary reason for selection of this site. Annex I habitat 'Water courses of plain to montane levels with	Conservation plan currently being updated. Current conservation objective is to reach

Site Name	Designation Type	Distance from site boundary	Description of Site Importance	Conservation objectives
			Ranunculion fluitantis and *Callitrocho-Batrachion* vegetation' is present and a primary qualifying feature for site selection. Annex II species freshwater pearl mussel is present and a primary qualifying feature for site selection. Due to its distance from the proposed substation site, the site is hydrologically isolated from the Proposed Development, and is not considered further.	'Good' conservation status by 2015. (JNCC 2011e, Northern Ireland Environment Agency 2010)
Deroran Bog	SAC	29km NW	Annex I habitats are the primary reason for selection of this site. Annex I habitat raised bog is present and a primary feature for site selection. The site is in a different catchment to the works, is hydrologically isolated from the Proposed Development and is not considered further.	Conservation plan currently being reviewed. Currently, the overall conservation objective is to achieve 'Favourable Conservation Status'. This is Achieved by protecting and where necessary, improving the water or water dependent environment to the extent necessary to achieve favourable conservation status for all the water dependent features for which the protected area is designated. (Department of the Environment Northern Ireland 2009, JNCC 2011f)
Black Bog	SAC Ramsar	30km NW	Annex I habitats are the primary reason for selection of this site. Annex I habitats include active raised bog habitats, and is one of the best examples of these in the United Kingdom. Due to its distance from the proposed substation site, the site is hydrologically isolated from the Proposed Development, and is not considered further.	Conservation plan currently being reviewed. Currently, the overall conservation objective is to achieve 'Favourable Conservation Status'. This is Achieved by protecting and where necessary, improving the water or water dependent environment to the extent necessary to achieve favourable conservation status for all the water dependent features for which the protected area is designated. (Department of the Environment Northern Ireland 2009, JNCC 2011g)

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JNCC (2011b). Natura 2000 Standard Data Form (Montiaghs Moss)

JNCC (2011c). Natura 2000 Standard Data Form (Magheraveely Marl Loughs)

JNCC (2011d). Natura 2000 Standard Data Form (Slieve Gullion)

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Appendix 11A Explanation of Noise Terms

Appendix 11A

Explanation of Noise Terms

Definitions of environmental noise terms are detailed in ISO1996 (BS7445), Description and Measurement of Environmental Noise.

The following explanations of the terms used in this assessment are meant to clarify the nature and use of each term and are made with reference to the glossary of terms in PPG24.

L_A A-weighted sound pressure level (in decibels, dB).

The measured sound level incorporating a logarithmic base and weighting system to approximate the manner in which humans perceive sound. An increase in 10 dB is approximately equivalent to a perceived doubling of loudness.

$L_{Aeq,T}$ Equivalent continuous A-weighted sound pressure level (in decibels, dB), over a given time interval 'T'. An average of the energy associated with the noise at a location over a given time interval. Where a time interval is not given it is typically considered as a continuous level.

Indicates the activity noise level of a source. Typical source descriptions include "ambient noise", "specific noise" and "residual noise" as defined in BS4142.

$L_{A50,T}$ A-weighted sound pressure level (in decibels, dB) obtained using "Fast" time-weighting that is exceeded for 50% of the given time interval.

$L_{A90,T}$ A-weighted sound pressure level (in decibels, dB) obtained using "Fast" time-weighting that is exceeded for 90% of the given time interval.

Defined as the background noise level at a location in BS4142.

Appendix 11B Line Noise Applet Prediction Notes

Appendix 11B Line Noise Applet Prediction Notes

Obtained from: ESBI Engineering & Facility Management Ltd

EPRI Applet AN-1, Twin Curlew

The applet used for this calculation is the AN-1 contained in the EPRI AC "Transmission Line Reference Book – 200kV and Above", Third Edition. This applet calculates the audible noise caused by corona on high voltage transmission lines at different distances from the line.

The audible noise is calculated as the L50 value in rain, i.e. the value exceeded for 50% of the periods during which there is measurable rain.

The results are given for both the EPRI (Electric Power Research Institute) and the BPA (Bonneville Power Administration) calculation methods described in the Reference Book.

The conductor phases are 2-bundle Curlew 592.6mm^2 while the earth wire is OPGW Keziah equivalent (AA/ACS 177/51).

The coordinates used for conductor and earth wire refer to the IVI tower configuration.

The 9 meters minimum height above ground for the outer conductor phases has been considered while 15 meters for the inner phase.

The earth wire height above ground is 18.75 meters. The horizontal distance between phases is equal to 9.5m while the vertical distance between phases is equal to 6m. The distance between EW is 13.5m (6.75m from central line).

The lateral profile distance has been chosen between 100 meters on both side of the center line at an altitude of 8 meters and a height above ground of 1 meter for the detector.

Appendix 11C Background noise levels recorded along the proposed overhead line route and substation in 2005

Appendix 11C Background noise levels recorded along the proposed OH line route and substation in 2005.

Measurement Results

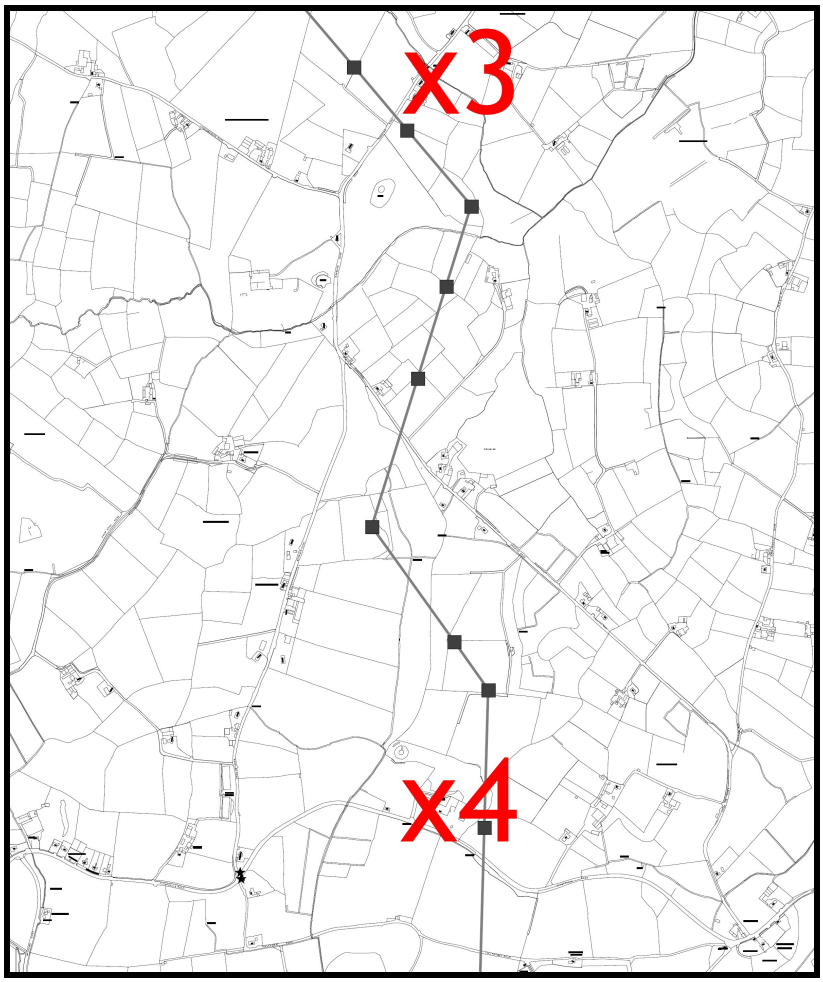
Location	Date	Start	Run time, minutes	L_{Aeq} dB	L_{Amax} dB	L_{A10}dB	L_{A50} dB	L_{A90} dB
1	19/8/2005	09:40	25	48.7	76.4	47.7	38.9	36.1
2	19/8/2005	10:16	21	50.5	64.2	53.3	49.3	44.6
3	19/8/2005	10:47	20	36.6	70.1	58.9	37.3	34.7
4	19/8/2005	11:15	21	52.7	73.0	49.1	38.4	33.4
5	19/8/2005	11:49	20	48.0	69.5	46.0	39.7	35.4
6	19/8/2005	12:26	20	42.4	55.4	45.7	37.7	32.7
7	19/8/2005	13:10	24	59.4	83.8	51.9	34.3	29.6
8	19/8/2005	13:51	22	56.9	79.2	53.7	39.1	36.2
9	19/8/2005	14:30	20	40.1	48.9	42.6	39.3	34.8
10	19/8/2005	14:57	20	43.6	65.3	46.7	42.3	37.3
11	19/8/2005	15:30	20	51.9	78.5	45.6	38.9	35.4
12	19/8/2005	15:59	20	54.6	79.1	51.3	38.3	32.7

Table 1: *Daytime Measurement Results*

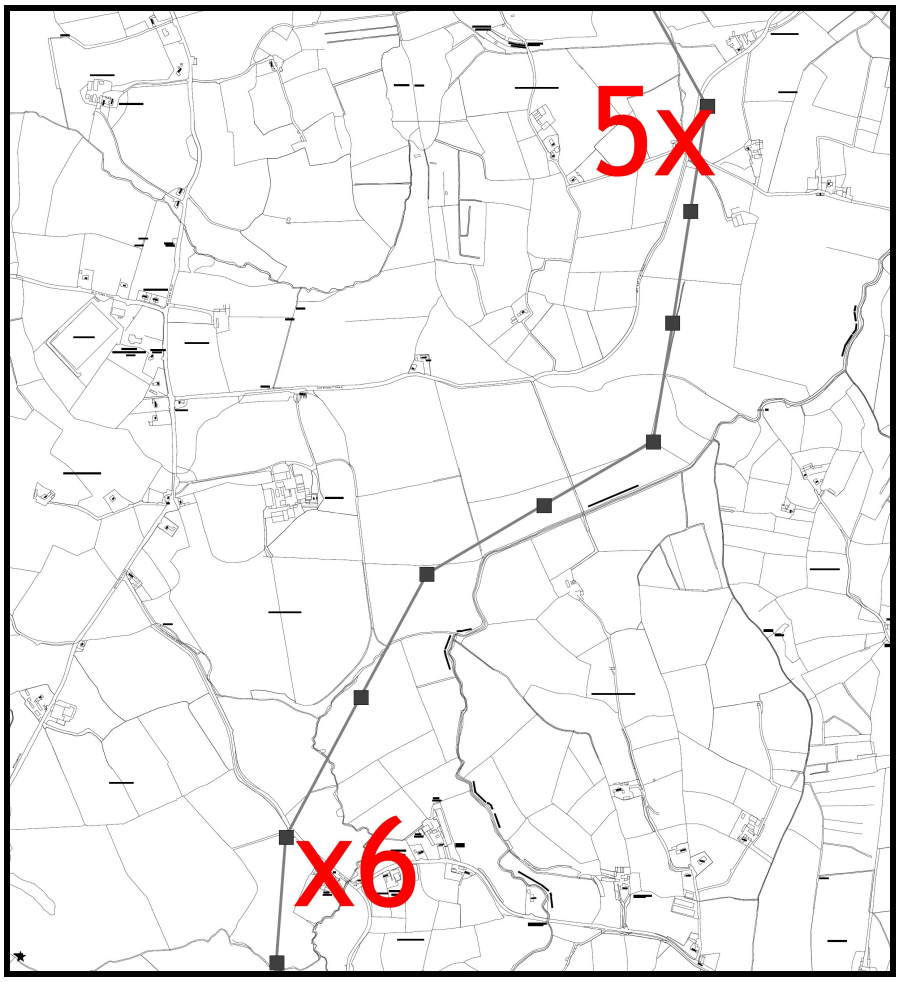
Location	Date	Start	Run time, minutes	L_{Aeq} dB	L_{Amax} dB	L_{A10}dB	L_{A50} dB	L_{A90} dB
1	25/8/2005	00:56	18	39.6	66.0	40.70	35.60	32.9
3	25/8/2005	01:49	19	32.6	62.5	30.60	28.10	26.4
6	25/8/2005	02:32	19	30.4	60.8	29.20	26.60	24.9
8	25/8/2005	03:25	17	33.0	62.9	31.10	27.90	25.8
10	25/8/2005	04:09	15	34.3	58.6	36.90	30.30	26.3
11	25/8/2005	04:39	17	35.4	66.3	34.70	29.60	27.3
12/13	25/8/2005	05:10	20	31.4	55.3	30.60	26.40	24.7

Table 2: *Night-time Measurement Results*

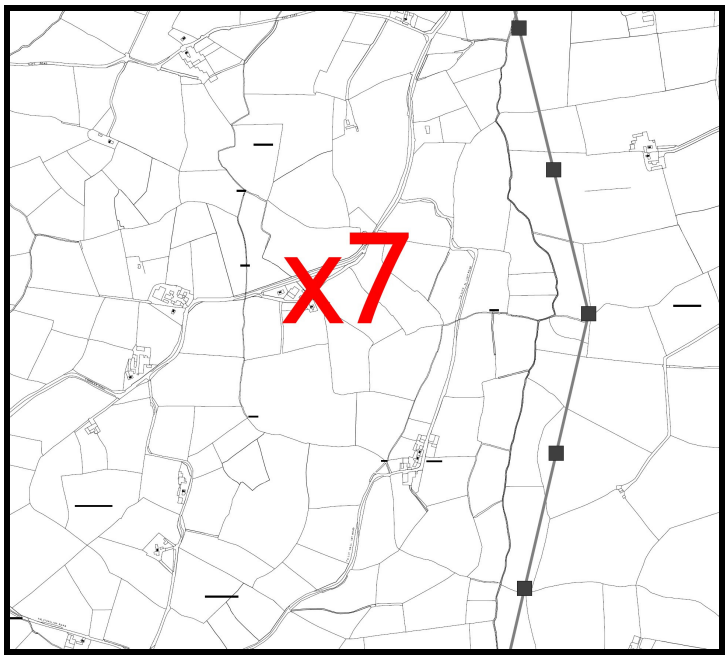
Locations1&2



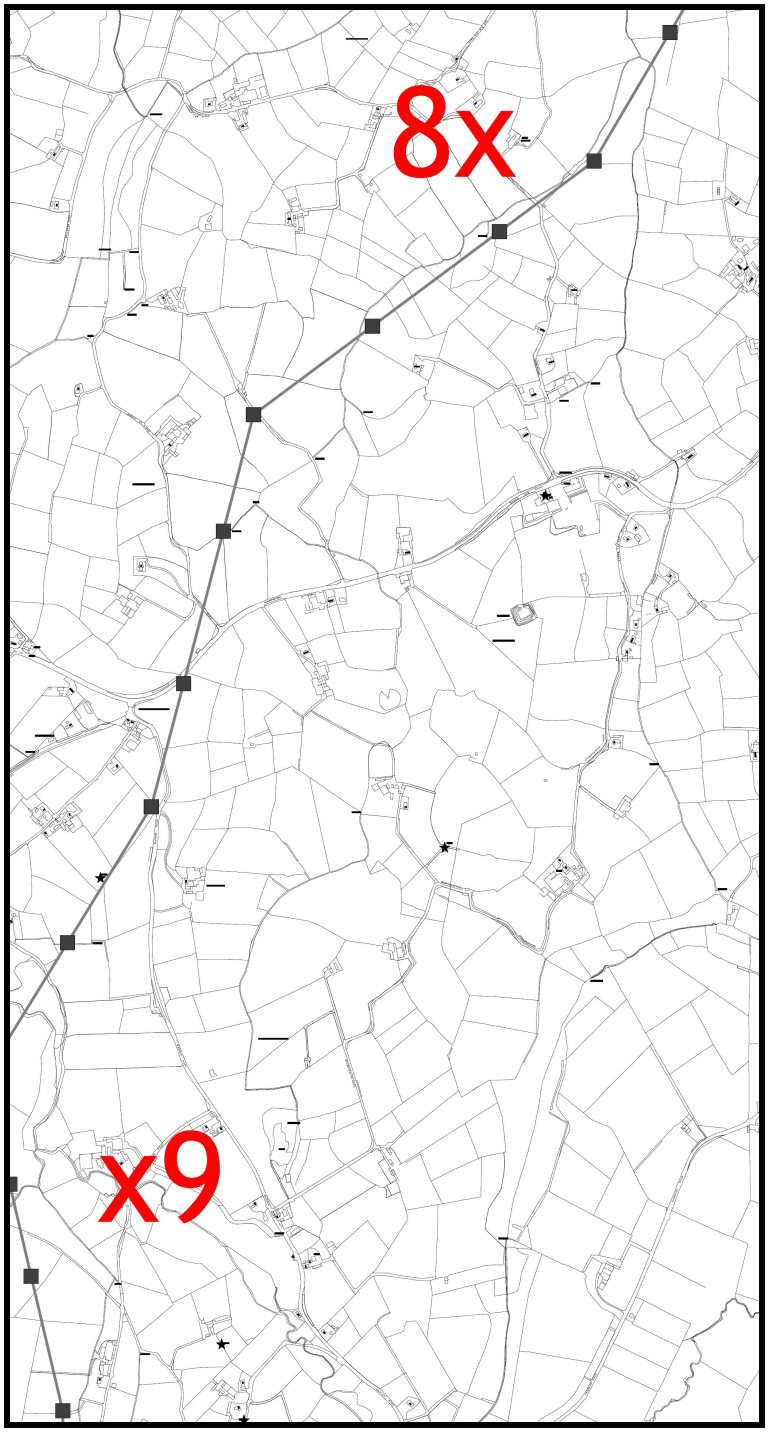
Locations 3 & 4



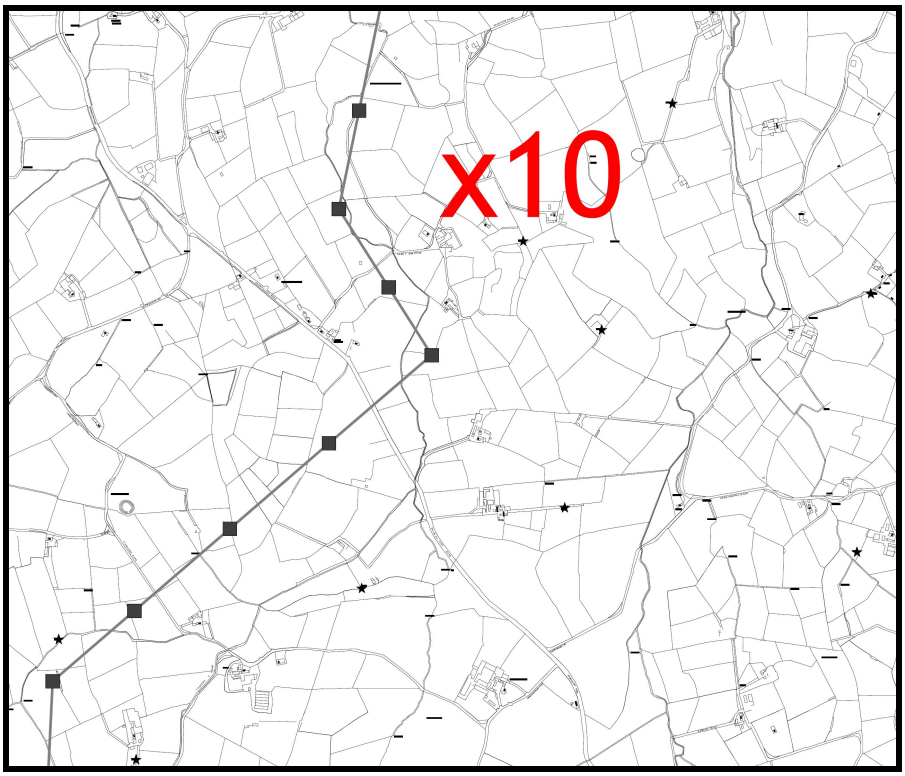
Locations 5 & 6



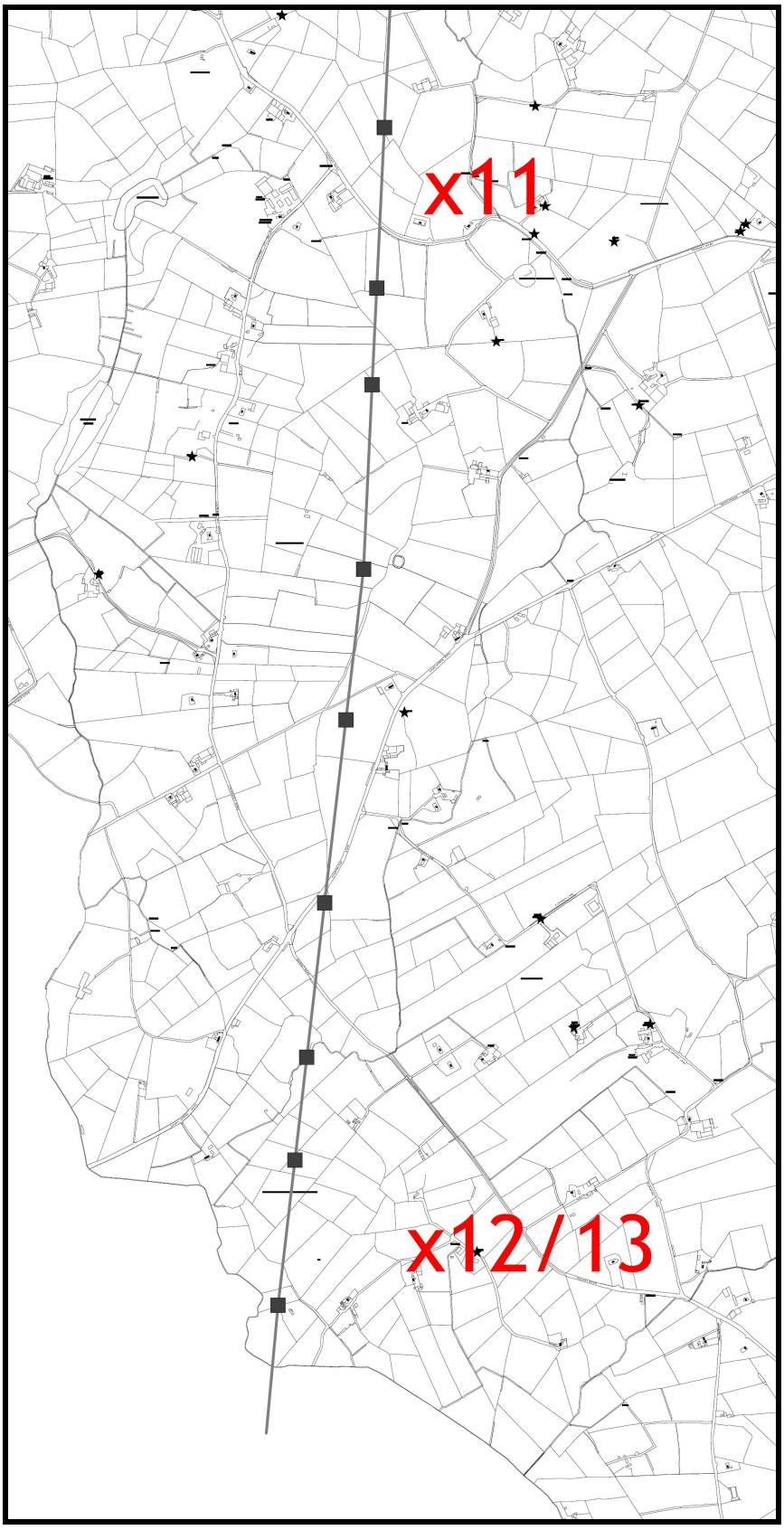
Location7



Locations 8 & 9



Location 10



Locations 11, 12 & 1The locations are shown by number and are coloured red. These maps are not to scale and are for illustrative purposes only.

Appendix 12A Cultural Heritage Features

Appendix 12A – Cultural Heritage Features

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
Historic Mapping	H 8560 5840	Modern	Lodge shown on 1906-7 and 1924 OS mapping.	1
Historic Mapping	H 8533 5803	Post-Medieval	Well shown on 1835 map.	2
HB13/08/070A	H 8533 5824	Post-Medieval	164 Trew Mount Road, a private house. **Listed Building Grade B.**	3
HB13/08/070B	H 8527 5808	Post-Medieval	166 Trew Mount Road, a private house. **Listed Building Grade B.**	4
Historic Mapping	H 8456 5764	Post-Medieval	Gravel pit shown on 1834 and gone by 1851 OS mapping.	5
OSNI R27 6326	H 8399 5809	Unknown	Three circular features that may be the remains of ring ditches or the old positions of livestock feeding stations.	6
OSNI R27 6326	H 8388 5780	Unknown	A single circular feature of substantial diameter which may be a ring ditch.	7
HB13/08/077	H 8354 5754	Post-Medieval	142 Moy road, thatched house. The listing includes the stable block, gates and gate piers. **Listed Building Grade B1.**	8
OSNI R27 6237	H 8379 5774	Unknown	A single circular feature which may be a possible ring ditch	9
TYR 061:008	H 8297 5441	Unknown	A holy well at the base of 'the nine well bridge' which preserves the tradition of nine holy wells in the area. The well was remodelled in the mid 20th century to give access to the water. A second spring well was to the north of the bridge. The wells have been destroyed by cattle trampling. Associated with eye complaints.	10
IHR 5544:000:00	H 8299 5441	Post-Medieval	Ninewells Bridge	11
TYR 061:026	H 8287 5407	Early Christian	A possible crannog in a small lake shown on 1857 OS mapping. The lake has been filled in although the outline is discernible. There are no visible remains of the island and nothing was observed during the cutting of a drain.	12
Historic mapping	H 8260 5388	Post-Medieval	Clonfeacle Glebe House and its gardens shown on 1851 OS mapping.	13
IHR 5545:000:00	H 8283 5385	Post-Medieval	Flax mill	14
OSNI R26 6250	H 8298 5381	Unknown	A circular feature that may be a ring ditch.	15

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
Historic mapping	H 8362 5401	Post-Medieval	Gravel pit shown on 1834 OS mapping.	16
OSNI R26 6250	H 8305 5358	Unknown	A sub-rectangular feature with a darker outer edge and a paler centre which may indicate a barrow or souterrain.	17
Historic mapping	H 8366 5293	Post-Medieval	Gravel pit shown on OS first edition mapping.	18
TYR 061:001	H 8292 5263	Unknown	A mound which was designated as a 'Fort' on 1834 OS mapping, but which appears to be a natural sandy glacial mound which would have been naturally defensible but on which there is no evidence of archaeological occupation.	19
HB13/11/039	H 8325 5205	Post-Medieval	Gate Lodge for Tullydowey House. **Listed Building Grade B1.**.	20
HB 13/11/040	H 8341 5177	Post-Medieval	Tullydowey House and gardens. **Listed Building Grade B1.**	21
Historic mapping	H 8356 5174	Post-Medieval	Mill dam shown on 1834 OS mapping.	22
IHR 5554:000:00	H 8366 5173	Post-Medieval	Old bleach mill	23
TYR 062:002	H 8336 5133	Modern	A small sub-circular tree ring in grounds of Tullydowey House. Planted with mature and semi-mature trees. No outer ditch or entrance.	24
Historic mapping	H 8266 5145	Post-Medieval	Wooden bridge shown on 1851 OS mapping.	25
IHR 0136:000:00	H 8267 5109	Post-Medieval	Hughes Ford across the River Blackwater shown on the first edition OS mapping.	26
TYR 061:042	H 826 512	Early Medieval	An island in the River Blackwater, the Inis enter da Dubul, is recorded in the Annals of Ulster as the site of a battle in 745 AD between the 'Ui Thuitri' and 'Int Airthir'.	27
IHR 0137:000:00	H 8350 5123	Post-Medieval	Rules Ford across the River Blackwater shown on the first edition OS mapping.	28
IHR 030:019:00	H 8249 5122	Post-Medieval	Atkinson's bridge over the Ulster Canal. This was one of nine bridges built of limestone in 1836.	29
IHR 030:020:00	H 8285 5056	Post-Medieval	Tullymore bridge over the Ulster Canal. This was one of nine bridges built of limestone in 1836.	30
Historic mapping	H 8303 5056	Post-Medieval	Ulster Canal	31
Historic Mapping	H 8327 5091	Post-Medieval	A group of houses called 'Englishtown' marked from the 2nd edition onwards this may indicate that this settlement was composed of immigrant English families.	32

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
Historic mapping	H 8339 5015	Post-Medieval	Annamoy House shown on first edition OS mapping. House with approach and gate lodge. Surrounded by orchards. By mid 20th century it had decreased in size.	33
ARM 008:026	H 8338 4999	Unknown	A possible enclosure or tree ring near Annamoy which has since been destroyed.	34
HB15/12/012	H 8233 4944	Post-Medieval	Mullyloughan House or Glenaul House, with formal laid gardens to the west and extensive surrounding parkland. **Listed Building Grade B.**	35
OSNI R27 6282	H 8258 4858	?Post-Medieval	An enclosure or very small field with extant boundaries abutting a further field boundary.	36
Historic Mapping	H 8244 4850	Post-Medieval	Tullysaran Roman Catholic chapel and graveyard is marked on the 1st edition OS mapping.	37
IHR 11061:000:00	H 8239 4794	Post-Medieval	A yarn manufactory.	38
OSNI R27 6282	H 8251 4797	Unknown	A sub-circular feature which may indicate a buried ditch associated with prehistoric settlement or burial.	39
Historic mapping	H 8244 4719	Modern	Rectory shown on the 1952 OS mapping.	40
Historic Mapping	H 8203 4656	Post-Medieval	A gravel pit.	41
ARM 011:017	H 8251 4640	?Early Christian	A possible rath which is marked as a large circular 'Fort' on the OS mapping situated on a low drumlin. The site has been levelled and there are no recognisable remains.	42
IHR 013:022:00	H 8182 4598	Post-Medieval	Woulsey's Bridge over the railway shown on 1860 mapping.	43
Historic mapping	H 8148 4546	Post-Medieval	School House shown on first edition OS mapping, but gone by the time of the second edition.	44
Historic mapping	H 8153 4542	Modern	Orange Hall shown on the 1906 OS mapping.	45
Historic mapping	H 8143 4512	Modern	Nursery shown on the 1906 OS mapping.	46
Historic mapping	H 8261 4448	Modern	Smithy shown on the 1906 OS mapping.	47
ARM 012:019	H 8271 4416	Early Christian	Rath on the summit of a drumlin with an extant ditch. A limelkiln is located on the NW side and wooden sheds have been erected within the interior. Partially destroyed in the east by farm buildings.	48
Historic mapping	H 8202 4214	Post-Medieval	Gravel pit shown on the 1835 OS mapping.	49
Historic Mapping	H 8153 4068	Post-Medieval	A gravel pit in use in 1835 and out of use by 1860.	50
Historic Mapping	H 8028 3919	Post-Medieval	A quarry in use in 1835 and out of use by 1860.	51

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
OSNI W24 4550	H 8047 3913	Post-Medieval	A mound which is likely to have been from post-medieval or modern quarrying activity	52
Historic Mapping	H 8069 3920	Post-Medieval	A quarry in use in 1835 and out of use by 1860.	53
ARM 015:018	H 8073 3894	Unknown	A steep sided domed mound which has been built on top of a natural drumlin. The summit is 10m above the surrounding ground level and traces of stone walling are visible which may form part of an enclosure. Its function remains uncertain but it is unlikely to have been a rath or motte. **Scheduled Monument.**	54
ARM 015:046	H 8071 3881	?Post-Medieval	A mound which is 4m high and likely to be associated with the small quarry to the NE side of the site. This does not appear to have had any archaeological activity.	55
HB15/11/037	H 7969 3860	Post-medieval	Ballymargy Bridge, formerly a Listed Building, although delisted in 1997.	56
IHR 0300:000:00	H 7959 3852	Post-Medieval	Flax mill shown on 1835 OS mapping onwards.	57
Historic mapping	H 7995 3806	Modern	Weir shown on the 1908 OS mapping.	58
IHR 313:000:00, IHR 312:000:00; Historic Mapping	H 801 378	Post-Medieval	A complex of industrial features visible from the first edition mapping onwards which include a corn mill, patch mills, mill race and flax mill.	59
Historic Mapping	H 7948 3755	Post-Medieval	A quarry in use in 1835 and out of use by 1860.	60
Historic Mapping	H 8018 3734	Post-Medieval	A quarry in use in 1835 and out of use by 1860.	61
Historic mapping	H 7940 3570	Post-Medieval	Quarry shown on 1934 OS mapping.	62
Historic Mapping	H 8011 3546	Post-Medieval	A quarry in use in 1835 and out of use by 1860.	63
Historic mapping	H 7909 3513	Post-Medieval	Quarry shown on 1934 OS mapping only.	64
ARM 019:004	H 7927 3492	Early Christian	A rath and souterrain known as Rawes Fort. The main enclosure is circular and has a bank. A shallow steep sided depression running through the NW quadrant and out of the bank is thought to be a robbed out souterrain. **Scheduled Monument.**	65
ARM 019:005	H 7909 3401	Early Christian	A rath shown on the 1835 and 1863 OS mapping. This was preserved in hedge boundaries, however these have been removed and little remains of the site.	66
ARM 019:006	H 7947 3353	Unknown	An enclosure on the top of a hill in an area of undulating pasture. 1835 and 1863 edition mapping described it as a ‘fort’. There are no visible remains now.	67

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
ARM 019:007	H 7883 32858	Early Christian	A counterscarp rath with a low uneven circular platform known as McNally's Fort. There is a ditch and remnants of a counterscarp bank heightened with material from a recent drainage ditch. **Scheduled Monument**	68
ARM 019:009	H 7935 3229	Unknown	A holy well known as the Blest Well or St Malachy's Well. It lies within a modern drystone wall within which is a paved area and steps to the well itself. It has a metal framed stone canopy and people have left offerings of coins, keys, rags and statuettes. An inscribed slab near the gate reads *Tobar Mochua agus Mocholmog.*	69
ARM 019:010	H 7933 3219	Early Christian	The remains of a former church and graveyard. The remains include a pillar of masonry and some lower sections of wall indicating a rectangular ground plan. Numerous headstones survive in the graveyard.	70
ARM 019:011	H 7902 3149	Early Christian	A rath which has been heavily modified to form a tree ring. The east and west side have been straightened and cut by a track but generally the circular shape has been retained. The bank has been heightened recently.	71
ARM 019:013	H 7840 3035	Prehistoric	A standing stone on top of a drumlin and incorporated into a field bank. The stone appears to be being gradually buried.	72
ARM 011:030	H 82083 47101	Unknown	A possible circular enclosure recorded on an aerial photograph taken in 1974. It is approx 40m in diameter and is defined by a dark vegetation mark and a low feature in positive relief. These may represent respectively, a buried ditch and an enclosing bank. Nothing is visible at ground level.	73
ARM 011:046	H 820 473	Unknown	A possible circular enclosure is visible on aerial photographs taken in June 1977. It is c.25m in diameter and is party visible in positive relief and party as a dark vegetation mark which may reflect a buried ditch. There is nothing visible at ground level.	74
ARM 011:047	H 826 475	Unknown	Three conjoined circular features were recorded from aerial photographs taken in June 1977. Each feature is around 20m in diameter and may reflect archaeological remains. They are visible as dark vegetation marks. There are no visible remains at ground level.	75
ARM 012:122	H 827 440	Unknown	A possible circular enclosure is visible in negative relief on aerial photographs taken in 1974. It is approximately 60m in diameter and may reflect an enclosing ditch. There is nothing visible on the ground.	76

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
TYR 061:007	H 8120 5404	Early Christian & Medieval	Sessiamagroll Fort. A very impressive site on a drumlin top with excellent views. This is a rath which has had a motte built on it, with the rest of the rath interior used as a bailey. The rath is enclosed by a bank & outer ditch; the interior is level. **Scheduled Monument**.	77
TYR 061:010	H 8108 5485	Early Christian	Lisgobban Rath, a bivallate rath with possible traces of a further ditch at the west and south-west. An entrance is at the north and may have been a stone causeway. **Scheduled Monument**.	78
TYR 062:001	H 8395 5174	Post-Medieval	Mullan Fort, an artillery fortification on a hill overlooking the River Blackwater. Flanking banks are shown on Bartlett representation of the fort & may be still extant as two lines of higher ground stretching from the site to the river. **Scheduled Monument**.	79
ARM 011:025	H 8246 4524	Early Christian	Possible enclosure at Ballydoo revealed by aerial photography. The west part of this possible enclosure is defined by an abandoned farm lane. The east edge of the lane consists of a stone faced scarp and hedge, and the lane itself is a slightly sunken, infilled strip. May be an early Christian ecclesiastical site. **Scheduled Monument**.	80
ARM 012:013	H 8351 4529	Bronze Age	Large multivallate hilltop enclosure known as Haughey's Fort. Excavations have revealed the fort dates to the late Bronze Age. **Scheduled Monument**.	81
ARM 012:014	H 8387 4546	Iron Age	Iron Age ritual site known as 'The Kings Stables'. Circular artificial pool with surrounding bank. At least 18 clay fragments from the manufacture of bronze swords. Animals bones have also been found. **State Care and Scheduled Monument**.	82
ARM 012:015	H 847 452	Bronze Age & Iron Age	Navan Fort. Also known as Emhain Mhacha; Emainia; An Eamhain. Enclosure covering *c*. 12 acres. Site dates from Bronze Age to the Iron Age. **State Care Monument**.	83
The Argory	See Plan	Post-Medieval	The demesne was established for the present house on the banks of the River Blackwater, built in 1824 (HB 15/1/2– includes Pleasure Gardens, stable yard, South Lodge, gate screens and gates). The Pleasure Ground on the north east of the house twin pavilions. There is a small enclosed early 19th century sundial garden at the house. An ilex avenue leads to the walled garden, which is made of brick and not cultivated. Of the three gate lodges, two of c 1835 are occupied and an earlier lodge of c.1825 is not used. National Trust. Public access.	84
HB15/01/002	H 8704 5828	Post-Medieval	The Argory. **Listed Building Grade B+**.	84a
ARM 015:010	H 7978 4038	Unknown	Large hilltop enclosure, possibly a rath platform although this is not certain. **Scheduled**	85

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
			Monument.	
ARM 015:019	H 8106 3915	Early Christian	Rath and souterrain at Lisglynn. An impressive rectangular earthwork defined by a massive bank & ditch. **Scheduled Monument**.	86
ARM 015:023	H 7928 3752	Early Christian	A well preserved circular rath at Tullyglush, with traces of a ditch remaining. **Scheduled Monument**.	87
ARM 019:001	H 8057 3583	Early Christian & Post-Medieval	Rath that has been reused as a lime kiln and tree ring. Evidence of kiln still visible. **Scheduled Monument**.	88
T-006	H 816 521	Post-Medieval	Benburb. **Register of Historic Parks, Gardens and Demesnes**	89
TYR 061:002	H 81470 51990	Post-Medieval	Benburb Castle. Built in *c.* 1615 by Sir Richard Wingfield. The bawn walls enclose an irregular rectangular area. At the north west and north east corners are rectangular towers. At the southern end is a circular tower with a stair down to a postern gate at the cliff edge. **Monument in State Care**.	90
HB13/11/005	H 8161 5223	Post-Medieval	Presbyterian Church. **Listed Building Grade B.**	91
HB13/08/047	H 8569 5687	Post-Medieval	Stone Tower. A circular tower, approximately 40 feet high with corbelled parapet and an interior spiral stair. **Listed Building Grade B1.**	92
HB13/08/064	H 8374 5853	Post-Medieval	The Grange. An early 19th century rebuild of a 17th century dwelling, with later modifications. **Listed Building Grade B.**	93
TYR 061:006	H 8082 5396	Early Christian	Crannog at Kilnagrew. In the middle of Curran Lough, an interdrumlin lake and over-looked by Sessiamagroll rath. **Scheduled Monument**.	94
Navan	H 841 452 (centre point)	Prehistoric	Navan Area of Special Archaeological Interest. Contains a number of Scheduled Monuments.	95
Conservation Area	H 849 861 (centre point)	Post-Medieval and later	Moy Conservation Area.	96
Battle	H 8540 5109	Post-Medieval	Battle of the Yellow Ford. 1598. A battle fought by Marshall Bagnall and O'Neill. No visible remains.	97
HB13/11/021	H 8154 5191	Post-Medieval	Chapel at Servite Priory, Benburb. It was originally built as a private house in the 19th century, and was later used as a hospital during the Second World War before becoming a Servite Priory. **Listed Building Grade B**.	98
HB13/11/001	H 8178 5213	Post-Medieval	Clonfeacle Parish Church of St. Patrick. **Listed Building Grade A**.	99

Reference	Grid Reference	Period	Description	No. on Fig. 12.1-12.6
ARM 021:082	H 82 45	Unknown	Possible graveyard at Tamlachta Bo. Unlocated.	-

Appendix 12B Criteria for Impact Significance

Appendix 12B – Criteria for Impact Significance

IMPACT SIGNIFICANCE	CRITERIA
Major	These effects are considered to be very important in the decision making process. These effects are important at a national level and to statutory bodies. Adverse – these effects will damage cultural heritage assets, their setting or context, so that their integrity or understanding is destroyed or is severely compromised, such that the resource can no longer be appreciated or understood. Effects will seriously conflict with national, regional and local policies. Mitigation measures may not deal appropriately with all aspects of the impact. Beneficial – these effects will halt rapid degradation or erosion of assets of national or regional importance, or result in significant restoration of setting and reestablishment of significance to heritage assets. Effects will significantly contribute to national, regional and local policies for the enhancement and promotion of heritage.
Moderate	These effects are likely to be important to considerations, but not key factors, in the decision making process, unless cumulative effects combine to raise the overall significance. These impacts are likely to be important at a regional level and to statutory bodies. Adverse – these effects will damage cultural heritage assets, or their setting, so that their integrity or understanding is compromised but not destroyed. Effects will be at odds with local and regional policies for heritage. Adequate mitigation measures can be specified. Beneficial – these effects are likely to result in the halting of degradation or erosion of heritage assets or result in the restoration of characteristic features or setting so that understanding and appreciation is improved. Effects will positively contribute to local and regional heritage policies.
Minor	These effects are unlikely to be critical factors in the decision making process, but are likely to be important factors in the design of a project. These effects are important at a local level. There may be some contribution to, or variance with local heritage policies. Adverse – the proposals will damage cultural heritage assets, or their setting, so that their integrity or understanding is diminished but not compromised. Adequate mitigation measures can be specified. Beneficial – the proposals will stabilise cultural heritage assets or enhance their setting, so that their integrity is maintained or understanding is improved.
Neutral	No effects upon cultural heritage or the effects are negligible. There is no conflict with, or contribution to, policies for protection of heritage resources.

Appendix 12C Ulster Museum Records

Appendix 12C – Ulster Museum Records

REFERENCE	TOWNLAND	PERIOD	DESCRIPTION
A5.1991	Moy	Early Bronze Age	A flat dagger found in dredgings from the River Blackwater.
A5156	Moy	Bronze Age	A bronze mount found in dredgings from the River Blackwater.
A5157	Moy	Bronze Age	A bronze mount found in dredgings from the River Blackwater.
A5174	Moy	Early Medieval	A lead weight found in the dredgings of the River Blackwater.
A5778	Moy	Bronze Age	A bronze boss found in the dredgings from the River Blackwater.
A6485	Moy	Bronze Age	A chip carved bronze mount from dredgings of the River Blackwater.
A6486	Moy	Bronze Age	A bronze strap attachment found in dredgings from the River Blackwater.
A5037	Moy	Bronze Age	A pseudo-pennannular bronze brooch from the dredgings in field 102.
A7085	Moy	Bronze Age	A bronze escutcheon from the dredgings of field 104-5.
A7118	Moy	Bronze Age	A bronze vessel fragment found in the dredgings of field 104
A7641	Moy	Bronze Age	A bronze distributor from the dredgings found in field 102.
A5761	Culrevog	Early Modern	A mount found in the River Blackwater dredgings in field 108.
A21.1991	Culrevog	Medieval	An iron axe head found in River dredgings.
A5794	Culrevog	Bronze Age	A bronze spearhead from the river dredgings.
A7535	Culrevog	Medieval	A bronze sheet found in the River Blackwater dredgings in field 109.
A7535	Culrevog	Unknown	A copper alloy patch found in the dredgings from the River Blackwater.
AWM.2150	Ballybrocky	Neolithic	A polished porcellanite stone axe.
RS 1990.20	Moy	Unknown	A pewter or bronze decorative piece possibly from a buckle was found in the River Blackwater near the bridge. It has mud and sand concretions.
RS 2002.1	Lisbane	Neolithic	A flint discoidal knife found in 1999 in ploughsoil approximately 20-30 yards east of Lisbane Fort.
RS 1982.12	Fergort	Prehistoric	A stone axe probably made of Great Longdale Tuff. Heavily weathered and broken. The cutting edge has been destroyed.
A23.1990	Derryoghill	Early Bronze Age	A flat axe-head has been found in the presumed dredgings of the River Blackwater.

REFERENCE	TOWNLAND	PERIOD	DESCRIPTION
A35.1990	Derryoghill	Early Medieval	A spiral-ringed pin found in spoil from the dredgings of the River Blackwater.
A85.1990	Derryoghill	Medieval	A weight has been found in the presumed dredgings of the River Blackwater.
A86.1990	Derryoghill	Early Medieval	A bar has been found in the presumed dredgings of the River Blackwater.
A87.1990	Derryoghill	Early Medieval	An openwork frame has been found in the presumed dredgings of the River Blackwater.
A88.1990	Derryoghill	Early Medieval	A fragment of a strap has been found in the presumed dredgings of the River Blackwater.
A89.1990	Derryoghill	Early Medieval	A fragment of a Strip has been found in the presumed dredgings of the River Blackwater.
A92.1990	Derryoghill	Early Medieval	A fragment of a sheet has been found in the presumed dredgings of the River Blackwater.
A94.1990	Derryoghill	Early Medieval	A fragment of a brooch has been found in the presumed dredgings of the River Blackwater.
A95.1990	Derryoghill	Early Medieval	An Escutcheon[1] bowl has been found in the presumed dredgings of the River Blackwater.
A139.1990	Derryoghill	Neolithic	A leaf-shaped arrowhead found in the dredgings of the River Blackwater.
A13.1990	Derryoghill	Early Medieval	Fragment of a guilded mount has been found in the presumed dredgings of the River Blackwater.
A24.1991	Derryoghill	Late Bronze Age	A bronze spearhead has been found in the presumed dredgings of the River Blackwater.
A28.1991	Derryoghill	Early Medieval	A fragment of a silver armlet has been found in the presumed dredgings of the River Blackwater.
A5012	Derryoghill	Early Medieval	A fragment of a bronze mount has been found in the presumed dredgings of the River Blackwater.
A5015	Derryoghill	Unknown	A bronze buckle tongue has been found in the presumed dredgings of the River Blackwater.
A5024	Derryoghill	Early Medieval	A bronze halberd[2] has been found in the presumed dredgings of the River Blackwater.
A5032	Derryoghill	Unknown	A bronze mount has been found in the presumed dredgings of the River Blackwater.
A5138	Derryoghill	Unknown	A bronze mount in two pieces has been found in the presumed dredgings of the River Blackwater.
A5141	Derryoghill	Early Medieval	A bronze ringed pin has been found in the presumed dredgings of the River Blackwater.
A5152	Derryoghill	Unknown	A bronze mount presumed to have been found

[1] A type of bowl designed to be suspended, usually from the roof. http://thesaurus.english-heritage.org.uk/

[2] A combination of spear and axe on a long handle. http://thesaurus.english-heritage.org.uk/

REFERENCE	TOWNLAND	PERIOD	DESCRIPTION
			in the dredgings of the River Blackwater.
A5178	Derryoghill	Unknown	A bronze ring has been found in the presumed dredgings of the River Blackwater.
A5372	Derryoghill	Unknown	A bronze strap attachment has been found in the presumed dredgings of the River Blackwater.
A5374	Derryoghill	Unknown	A pair of bronze interlinked rings has been found in the presumed dredgings of the River Blackwater.
A5375	Derryoghill	Unknown	A bronze rapier has been found in the presumed dredgings of the River Blackwater.
A5503	Derryoghill	Unknown	A bronze bit link has been found in the presumed dredgings of the River Blackwater.
A5504	Derryoghill	Unknown	A bronze cross arm has been found in the presumed dredgings of the River Blackwater.
A5505	Derryoghill	Unknown	A bronze mount has been found in the presumed dredgings of the River Blackwater.
A5506	Derryoghill	Unknown	A lead weight has been found in the presumed dredgings of the River Blackwater.
A5777	Derryoghill	Unknown	A bronze buckle has been found in the presumed dredgings of the River Blackwater.
A6036	Derryoghill	Unknown	A bronze mount has been found in the presumed dredgings of the River Blackwater.
A6038	Derryoghill	Unknown	A bronze ingot has been found in the presumed dredgings of the River Blackwater.
A6039	Derryoghill	Unknown	A bronze key has been found in the presumed dredgings of the River Blackwater.
A6040	Derryoghill	Unknown	A bronze strap attachment has been found in the presumed dredgings of the River Blackwater.
A6417	Derryoghill	Unknown	A bronze binding has been found in the presumed dredgings of the River Blackwater.
A6418	Derryoghill	Unknown	An iron axe-head has been found in the presumed dredgings of the River Blackwater.
A6420	Derryoghill	Unknown	A lead weight has been found in the presumed dredgings of the River Blackwater.
A35.1990	Derryoghill	Unknown	A bronze ringed pin from the Blackwater river dredgings found in field 127.
A5376	Derryoghill	Unknown	A bronze cheek piece has been found in the presumed dredgings of the River Blackwater.
A5009	Derryoghill	Medieval	A fragment of a bronze striner from the presumed Blackwater river dredgings found in field Tyr 131.
A5025	Derryoghill	Medieval	A snake shaped pin found in the presumed Blackwater river dredgings found in field 129-30 approx.

REFERENCE	TOWNLAND	PERIOD	DESCRIPTION
A8360	Derryoghill	Medieval	A bronze finger-ring. There was presumed Blackwater dredgings in the vicinity of the find spot.
A8368	Derryoghill	Medieval	A bronze ring. There was presumed Blackwater dredgings in the vicinity of the find spot.
A8370	Derryoghill	Medieval	A bronze stud. There was presumed Blackwater dredgings in the vicinity of the find spot.
A8371	Derryoghill	Medieval	A bronze foot. There was presumed Blackwater dredgings in the vicinity of the find spot.
A10129	Derryoghill	Unknown	Bronze edging. There was presumed Blackwater dredgings in the vicinity of the find spot.
A10130	Derryoghill	Unknown	A bronze strap end. There was presumed Blackwater dredgings in the vicinity of the find spot.
A10132	Derryoghill	Unknown	A bronze strap end. There was presumed Blackwater dredgings in the vicinity of the find spot.
A10133	Derryoghill	Unknown	Bronze edging .There was presumed Blackwater dredgings in the vicinity of the find spot.
A10124	Derryoghill	Unknown	A bronze hook. There was presumed Blackwater dredgings in the vicinity of the find spot.
A101335	Derryoghill	Unknown	A fragment of a silver hack. There was presumed Blackwater dredgings in the vicinity of the find spot.
A21537	Derryoghill	Unknown	An iron axe-head. There was presumed Blackwater dredgings in the vicinity of the find spot.
A5009	Derryoghill	Unknown	A copper alloy strainer. Found in ex Blackwater dredgings.

Appendix 12D Aerial Photographs

Appendix 12D – Aerial Photographs

Vertical

REFERENCE	FRAME	DATE	APPROXIMATE SCALE
OSNI R27	6350	1984	1:10,000
OSNI R27	6326	1984	1:10,000
OSNI R27	6322	1984	1:10,000
OSNI R27	6321	1984	1:10,000
OSNI R27	6300	1984	1:10,000
OSNI R27	6237	1984	1:10,000
OSNI R27	6299	1984	1:10,000
OSNI R26	6250	1984	1:10,000
OSNI R26	6255	1984	1:10,000
OSNI R27	6281	1984	1:10,000
OSNI R27	6282	1984	1:10,000
F836 W5	836	1974	1:10,000
F836 W5	833	1974	1:10,000
F836 W5	834	1974	1:10,000
OSNI W25	4770	1977	1:10,000
OSNI W25	4739	1977	1:10,000
OSNI W25	4722	1977	1:10,000
OSNI W25	4680	1977	1:10,000
OSNI W24	4550	1977	1:10,000
OSNI R22	5042	1983	1:20,000
OSNI R27	6364	1984	1:20,000
OSNI R22	5081	1983	1:20,000
OSNI R22	5119	1983	1:20,000
OSNI W41	8010	1980	1:10,000
OSNI W41	8008	1980	1:10,000

Appendix 12E Cultural Heritage Features within Wider Study Area

Appendix 12E – Cultural Heritage Features within Wider Study Area

Reference	Description
062:001	Mulland Fort. **Scheduled Monument**
062:003	Clonfeacle Cross. **Scheduled Monument**
061:006	Crannog **Scheduled Monument**
061:007	Rath and motte: Sessiamagaroll Fort. **Scheduled Monument**
019:007	Rath. **Scheduled Monument**
019:004	Rath: Rawes Fort. **Scheduled Monument**
019:002	Rath. **Scheduled Monument**
016:001	Large Enclosure. **Scheduled Monument**
015:023	Rath. **Scheduled Monument**
015:022	Rath. **Scheduled Monument**
019:001	Rath. **Scheduled Monument**
016:030	Rath. **Scheduled Monument**
016:008	Rath. **Scheduled Monument**
015:034	Megalithic tomb. **Scheduled Monument**
015:026	Castle. **Scheduled Monument**
016:007	Enclosure **Scheduled Monument**
015:020	Multivaallate Rath. **Scheduled Monument**
015:019	Rath: Lisglynn **Scheduled Monument**
015:017	Crannog. **Scheduled Monument**
012:500	Windmill Stump. **Scheduled Monument**
011:012	Circular Enclosure. **Scheduled Monument**
011:010	Circular Enclosure. **Scheduled Monument**
011:008	Mound. **Scheduled Monument**
008:011	Platform rath. **Scheduled Monument**
012:002	Mound. **Scheduled Monument**
011:025	Enclosure. **Scheduled Monument**
012:027	Cairn or barrow: Niall's or O'Neill's Mound. **Scheduled Monument**
015:003	Bivallate Rath. **Scheduled Monument**

Reference	Description
012:013	Large hilltop Enclosure: Haughey's Fort. **Scheduled Monument**
008:001	Rath and Artillery Basation. **Scheduled Monument**
012:094	Ring Ditches. **Scheduled Monument**
015:035	Barrow. **Scheduled Monument**
015:018	Burial Mound. **Scheduled Monument**
015:004	Barrow. **Scheduled Monument**
015:010	Large Hilltop Enclosure. **Scheduled Monument**
012:084	Mound. **Scheduled Monument**
012:034	Votive site and find spot of four Iron Age horns. 'Loughnashade'. **Scheduled Monument**
061:010	Bivallate Rath 'Ligobban Fort'. **Scheduled Monument**
012:102	Crop-mark (parallel linear ditches). **Scheduled Monument**
012:014	Earthwork: the King's Stables. **Scheduled Monument**
004:001	Charlemont Fort. **Scheduled Monument**
HB12/09/072	Site of a house. **Listed Building Grade B+**
HB13/02/028	Outbuildings at Daisyhill House. **Listed Building Grade B1**
HB13/02/032	Outbuildings at Summerhill. **Listed Building Grade B2**
HB13/07/009	Laghey Methodist Church. **Listed Building Grade B**
HB13/07/011	Killyman Rectory. **Listed Building Grade B**
HB13/07/013	Tamnamore House. **Listed Building Grade B1**
HB13/07/017	St. Andrew's Church(Church of Ireland). **Listed Building Grade B**
HB13/07/020	The Sacred Heart RC Church(aka St.Columba's). **Listed Building Grade B**
HB13/07/022	Clonmore Bridge. **Listed Building Grade B2**
HB13/07/023	Derryesker House. **Listed Building Grade B1**
HB13/08/001	St.James Church. **Listed Building Grade A**
HB13/08/002	Fernshaw. **Listed Building Grade B**
HB13/08/003	Laurel Vale **Listed Building Grade B**
HB13/08/004 A	40 The Square. **Listed Building Grade B2**
HB13/08/004 B	41 The Square. **Listed Building Grade B**

Reference	Description
HB13/08/004 C	42 The Square. **Listed Building Grade B2**
HB13/08/004 D	43 The Square. **Listed Building Grade B**
HB13/08/004 E	44 The Square. **Listed Building Grade B**
HB13/08/004 F	45 The Square. **Listed Building Grade B**
HB13/08/005	Merrion House, 46 The Square. **Listed Building Grade B1**
HB13/08/006	3 The Square.
HB13/08/007	4 The Square. **Listed Building Grade B1**
HB13/08/008	5-6 The Square. **Listed Building Grade B**
HB13/08/009 A	7 The Square. **Listed Building Grade B2**
HB13/08/009 B	8 The Square. **Listed Building Grade B2**
HB13/08/010	Tamney's public house. **Listed Building Grade B2**
HB13/08/011	11-12 The Square. **Listed Building Grade B2**
HB13/08/012	Ulster Bank. **Listed Building Grade B**
HB13/08/013	15 The Square. **Listed Building Grade B**
HB13/08/016	18 The Square. **Listed Building Grade B**
HB13/08/017 A	19 The Square. **Listed Building Grade B**
HB13/08/017 B	20 The Square. **Listed Building Grade B**
HB13/08/017 C	21 The Square. **Listed Building Grade B**
HB13/08/018	22 The Square. **Listed Building Grade B**
HB13/08/018 A	23 The Square. **Listed Building Grade B**

Reference	Description
HB13/08/019	The Village Bar, 24-25 The Square. **Listed Building Grade B2**
HB13/08/020	Presbyterian Manse, 26 The Square. **Listed Building Grade B1**
HB13/08/021 A	27 The Square. **Listed Building Grade B2**
HB13/08/021 B	28 The Square. **Listed Building Grade B**
HB13/08/021 C	29 The Square. **Listed Building Grade B2**
HB13/08/022	31 The Square. **Listed Building Grade B1**
HB13/08/023 A	33 The Square. **Listed Building Grade B2**
HB13/08/023 B	34 The Square. **Listed Building Grade B2**
HB13/08/023 C	35 The Square.
HB13/08/023 D	36 The Square. **Listed Building Grade B2**
HB13/08/024	The Rectory, 37 The Square. **Listed Building Grade B1**
HB13/08/025	The Parish Hall, 39 The Square. **Listed Building Grade B1**
HB13/08/026 A	5 Killyman Street. **Listed Building Grade B**
HB13/08/026 B	The Sly Fox. **Listed Building Grade B**
HB13/08/026 C	9 Killyman Street. **Listed Building Grade B1**
HB13/08/026 D	9a Killyman Street. **Listed Building Grade B**
HB13/08/026 E	11 Killyman Street. **Listed Building Grade B2**
HB13/08/026 F	13 Killyman Street.

Reference	Description
HB13/08/027	31 Killyman Street. **Listed Building Grade B1**
HB13/08/028	33 Killyman Street. **Listed Building Grade B1**
HB13/08/029	35 Killyman Street.
HB13/08/030 A	37 Killyman Street. **Listed Building Grade B1**
HB13/08/031	Charlemont Bridge. **Listed Building Grade B1**
HB13/08/034	39 Charlemont Street. **Listed Building Grade B1**
HB13/08/037	22 Charlemont Street. **Listed Building Grade B**
HB13/08/037 A	24 Charlemont Street. **Listed Building Grade B**
HB13/08/038	Presbyterian Church. **Listed Building Grade B**
HB13/08/039	St. John the Baptist RC Church. **Listed Building Grade B**
HB13/08/040 A	12 Dungannon Street. **Listed Building Grade B1**
HB13/08/040 B	14 Dungannon Street. **Listed Building Grade B1**
HB13/08/041	Moy Methodist Church. **Listed Building Grade B**
HB13/08/043 A	29 Dungannon Street. **Listed Building Grade B2**
HB13/08/043 B	31 Dungannon Street. **Listed Building Grade B2**
HB13/08/044	Gate lodge. **Listed Building Grade B1**
HB13/08/045	Old stable yard. **Listed Building Grade B**
HB13/08/046	Roxborough, 220 Trew Mount Road. **Listed Building Grade B2**
HB13/08/047	Stone tower (aka Belvedere Tower). **Listed Building Grade B1**
HB13/08/050	Gorestown House. **Listed Building Grade B**
HB13/08/056 A	9 Dungannon Street. **Listed Building Grade B1**
HB13/08/056 B	11 Dungannon Street. **Listed Building Grade B1**

Reference	Description
HB13/08/056 C	13 Dungannon Street. **Listed Building Grade B1**
HB13/08/056 D	15 Dungannon Street. **Listed Building Grade B1**
HB13/08/056 E	17-19 Dungannon Street. **Listed Building Grade B1**
HB13/08/056 F	21 Dungannon Street. **Listed Building Grade B1**
HB13/08/056 G	23 Dungannon Street. **Listed Building Grade B1**
HB13/08/057	Ye Olde Oak Bar, 19-21 Killyman Street. **Listed Building Grade B**
HB13/08/057 A	Ye Olde Oak Ba, 19 Killyman Street. **Listed Building Grade B**
HB13/08/057 B	Ye Olde Oak Bar, 21 Killyman Street. **Listed Building Grade B**
HB13/08/061	Rhone Hill, 8 Dreemore Road. **Listed Building Grade B1**
HB13/08/062	125 Trew Mount Road. **Listed Building Grade B1**
HB13/08/064	The Grange. **Listed Building Grade B**
HB13/08/065	14 Grange Road. **Listed Building Grade B+**
HB13/08/066	Bridgehill , 110 Moy Road. **Listed Building Grade B1**
HB13/08/067	Grange park, 35 Grange Road. **Listed Building Grade B+**
HB13/08/068	Friends Meeting House. **Listed Building Grade B**
HB13/08/069	Hall (formerly Friends Meeting House). **Listed Building Grade B**
HB13/08/070 A	164 Trew Mount Road. **Listed Building Grade B**
HB13/08/070 B	166 Trew Mount Road. **Listed Building Grade B**
HB13/08/077	142 Moy Road. **Listed Building Grade B+**
HB13/10/041 A	Alexander House. **Listed Building Grade B1**

Reference	Description
HB13/10/077	Dredge Bridge over the Blackwater. **Listed Building Grade B+**
HB13/10/079	Oona River Bridge. **Listed Building Grade B2**
HB13/10/080	Eglish Road Bridge (over Oona Water). **Listed Building Grade B1**
HB13/11/002	Old mill buildings. **Listed Building Grade B**
HB13/11/003	Maydown Bridge. **Listed Building Grade B2**
HB13/11/004	Gate screen. **Listed Building Grade B1**
HB13/11/005	Presbyterian Church. **Listed Building Grade B**
HB13/11/008 A	45-47 Main Street. **Listed Building Grade B**
HB13/11/008 B	49-51 Main Street. **Listed Building Grade B**
HB13/11/009 A	53 Main Street. **Listed Building Grade B**
HB13/11/009 B	55 Main Street. **Listed Building Grade B2**
HB13/11/009 C	57 Main Street. **Listed Building Grade B**
HB13/11/010	241 Derryfubble Road. **Listed Building Grade B1**
HB13/11/012 A	65 Main Street.
HB13/11/012 B	67 Main Street.
HB13/11/012 C	69 Main Street. **Listed Building Grade B2**
HB13/11/012 D	71 Main Street. **Listed Building Grade B**
HB13/11/013	60 Main Street. **Listed Building Grade B**
HB13/11/014	Post office , 61 Main Street. **Listed Building Grade B1**
HB13/11/020	Cottage within the Bawn, Benburb Castle. **Listed Building Grade B1**
HB13/11/027	St. Columba's church (C of I). **Listed Building Grade B**

Reference	Description
HB13/11/032	School house. **Listed Building Grade B1**
HB13/11/037	Battleford Bridge. **Listed Building Grade B2**
HB13/11/039	39 Tullydowey Road. **Listed Building Grade B1**
HB13/11/040	Tullydowey House. **Listed Building Grade B1**
HB13/11/040 B	Outbuildings at Tullydowey House. **Listed Building Grade B1**
HB13/11/041	Gate lodge. **Listed Building Grade B1**
HB13/16/003	Ranfurly Park Farm (now Manor Court Nursing Home). **Listed Building Grade B1**
HB13/16/004 A	The East Golf House. **Listed Building Grade B1**
HB13/16/004 B	The West Golf House. **Listed Building Grade B**
HB13/16/013 A	24 Moygashel Row. **Listed Building Grade B1**
HB13/16/013 B	25 Moygashel Row. **Listed Building Grade B1**
HB13/16/013 C	26 Moygashel Row. **Listed Building Grade B1**
HB13/16/013 D	28 Moygashel Row. **Listed Building Grade B1**
HB13/16/013 E	29 Moygashel Row. **Listed Building Grade B1**
HB13/16/013 F	30 Moygashel Row. **Listed Building Grade B1**
HB13/16/019	Lake dam, Dungannon Park. **Listed Building Grade B1**
HB13/20/035	Gortmerron Lodge. **Listed Building Grade B1**
HB13/20/037	Killynaill House. **Listed Building Grade B1**
HB15/01/001	Summer Island, 30 Summer Island Road. **Listed Building Grade B+**
HB15/01/002	The Argory. **Listed Building Grade B+**
HB15/01/003	South lodge at the Argory. **Listed Building Grade B**

Reference	Description
HB15/01/004	Sunday School at the Argory. **Listed Building Grade B2**
HB15/01/005	Farmhouse (land steward's house) at the Argory. **Listed Building Grade B1**
HB15/01/006	Bond's Bridge. **Listed Building Grade B1**
HB15/01/020	Fairlawn. **Listed Building Grade B2**
HB15/01/023	Charlemont Cottage. **Listed Building Grade B1**
HB15/01/024	Gateway to Charlemont Fort. **Listed Building Grade B1**
HB15/01/030	Lock house. **Listed Building Grade B1**
HB15/01/032	Church of Ireland Church. **Listed Building Grade B**
HB15/01/034	Miller's Bridge. **Listed Building Grade B**
HB15/01/039	Bridge House. **Listed Building Grade B1**
HB15/01/041	Lock keeper's house. **Listed Building Grade B1**
HB15/01/055	Dartry Lodge. **Listed Building Grade B**
HB15/01/057	Tullyroan Bridge. **Listed Building Grade B2**
HB15/01/060	Tullyroan House **Listed Building Grade B**
HB15/02/055	St Francis' Church of Ireland Church. **Listed Building Grade B+**
HB15/03/002	Meridian Sitings. **Listed Building Grade B+**
HB15/03/018	100 Salters Rrange. Road **Listed Building Grade B1**
HB15/03/021	The Grange. **Listed Building Grade B1**
HB15/08/015 A	Dunlarg House. **Listed Building Grade B2**
HB15/08/015 B	Entrance gates at Dunlarg House. **Listed Building Grade B2**
HB15/09/001	Willowbank. **Listed Building Grade B**
HB15/09/002	St. Patrick's R C Church. **Listed Building Grade B**
HB15/09/003	Kirk memorial. **Listed Building Grade B1**
HB15/09/006	St. Matthew's Church. **Listed Building Grade B**
HB15/09/007 A	14 Bridge Street. **Listed Building Grade B1**
HB15/09/007	16 Bridge Street. **Listed Building Grade B1**

Reference	Description
B	
HB15/09/007 C	18 Bridge Street. **Listed Building Grade B1**
HB15/09/009	Second Presbyterian Church. **Listed Building Grade B**
HB15/09/010	Northern Bank. **Listed Building Grade B1**
HB15/09/021	Railway viaduct. **Listed Building Grade B2**
HB15/09/022	Millmount. **Listed Building Grade B1**
HB15/09/024	Fair Green House. **Listed Building Grade B2**
HB15/09/025	Railway bridge. **Listed Building Grade B2**
HB15/09/027 A	26 Davis Street. **Listed Building Grade B1**
HB15/09/027 B	28 Davis Street. **Listed Building Grade B1**
HB15/09/028	9 Kinelowen Street. **Listed Building Grade B2**
HB15/09/029	11-19 Kinelowen Street. **Listed Building Grade B1**
HB15/10/001	Glencarn House. **Listed Building Grade B1**
HB15/10/003	Drumhillery Presbyterian Church. **Listed Building Grade B**
HB15/10/004	The Rectory. **Listed Building Grade B2**
HB15/10/005	Lecture hall to Temple First Presbyterian. **Listed Building Grade B1**
HB15/10/006	First Presbyterian Church (The Temple). **Listed Building Grade B+**
HB15/10/011	St. Joseph's R C Church. **Listed Building Grade B**
HB15/10/013	Cassily's farm. **Listed Building Grade B1**
HB15/10/014	121 Drumhillery Road. **Listed Building Grade B1**
HB15/10/016	111 Drumhillery Road. **Listed Building Grade B2**
HB15/10/017	Sheffield House. **Listed Building Grade B2**
HB15/10/020	Pisgah Lodge. **Listed Building Grade B2**
HB15/10/021	147 Crosskeys Road. **Listed Building Grade B1**
HB15/10/026	Milestone on Castleblayney Road. **Listed Building Grade B1**
HB15/11/002	Ballindarrang Lodge. **Listed Building Grade B+**
HB15/11/010	Fellow's Hall. **Listed Building Grade B1**

Reference	Description
HB15/11/014	St. Mark's Church. **Listed Building Grade B**
HB15/11/021	Presbyterian Church. **Listed Building Grade B**
HB15/11/022	The White House. **Listed Building Grade B2**
HB15/11/023	St. John's C of I Church. **Listed Building Grade B**
HB15/11/024	St. Louis Convent. **Listed Building Grade B1**
HB15/11/026	St. John's R C Church. **Listed Building Grade B**
HB15/11/029	Former Tynan Primary School & Master's House. **Listed Building Grade B2**
HB15/11/035	The Former Market and Courthouse. **Listed Building Grade B2**
HB15/11/037	Ballymargy Bridge.
HB15/12/001	Knappagh House. **Listed Building Grade B+**
HB15/12/002	West Lodge. **Listed Building Grade B1**
HB15/12/003	Corn and flax mills. **Listed Building Grade B2**
HB15/12/004	Lock house on Blackwater Navigation. **Listed Building Grade B1**
HB15/12/005	Lock and mooring post on Blackwater Navigation. **Listed Building Grade B**
HB15/12/006	Foot bridge over the Blackwater Navigation. **Listed Building Grade B**
HB15/12/007	159 Tullysaran Road.
HB15/12/009	Edenderry House. **Listed Building Grade B+**
HB15/12/010	Agent's house of Knappagh House. **Listed Building Grade B2**
HB15/12/011	Orr/sinton's Mill **Listed Building Grade B+**
HB15/12/011 A	Thomas Telford lock house. **Listed Building Grade B1**
HB15/12/011 B	Acomodation Bridge and lock. **Listed Building Grade B1**
HB15/12/012	Glenaul House. **Listed Building Grade B1**
HB15/12/013	Maydown House. **Listed Building Grade B1**
HB15/12/014	Maydown Cottage and yard gate.
HB15/12/016	Holy Trinity Parish Churc.h **Listed Building Grade B**
HB15/12/017	Knappa Vale. **Listed Building Grade B1**
HB15/12/020 A	Elm Park Lodge (1), 31 Elm Park Road. **Listed Building Grade B2**

Reference	Description
HB15/12/020 B	Elm Park Lodge (2), 41 Knappagh Road. **Listed Building Grade B2**
HB15/12/039	Church of the Immaculate Conception. **Listed Building Grade B**
HB15/12/047	Canal bridge. **Listed Building Grade B2**
HB15/14/002	Beech Hill House. **Listed Building Grade B1**
HB15/14/003 A	70 Hill Street. **Listed Building Grade B2**
HB15/14/003 B	72 Hill Street. **Listed Building Grade B2**
HB15/14/005	Roughan House. **Listed Building Grade B2**
HB15/14/006	Manor House Special Care Hospital. **Listed Building Grade B1**
HB15/14/007	Fountain at Manor House Special Care Hospital. **Listed Building Grade B1**
HB15/14/011	Milford County Primary School. **Listed Building Grade B2**
HB15/14/012	Former Madden County Primary School (now parish hall). **Listed Building Grade B2**
HB15/14/013	St.John's church (C of I). **Listed Building Grade B**
HB15/14/016	Roan Cottage. **Listed Building Grade B1**
HB15/14/017	Rosebrook House. **Listed Building Grade B1**
HB15/14/018	Summer Hill House. **Listed Building Grade B1**
HB15/14/021	Bridge at Lislea House. **Listed Building Grade B1**
HB15/14/023	McCrum Institute. **Listed Building Grade B1**
HB15/14/051	151 The Rock Road. **Listed Building Grade B1**
HB15/16/023	Former Drumcairne Mill. **Listed Building Grade B2**
HB15/19/013	Palace Farm. **Listed Building Grade B1**
HB15/19/014	Umgola House. **Listed Building Grade B1**
HB15/19/018	St. Malachy's R C Church. **Listed Building Grade B**
HB15/20/030	Convent of the Sacred Heart. **Listed Building Grade B**
HB15/20/032	Callan Bridge. **Listed Building Grade B1**
A-035	Tynan Abbey. **Register of Historic Parks, Gardens and Demesnes**
A-029	The Palace. **Register of Historic Parks, Gardens and Demesnes**
A-002	The Argory. **Register of Historic Parks, Gardens and Demesnes**

Reference	Description
A-016	Fellows Hall. **Register of Historic Parks, Gardens and Demesnes**
A-043	Summer Island. **Register of Historic Parks, Gardens and Demesnes**
A-036	Umgola. **Register of Historic Parks, Gardens and Demesnes**
Navan	Navan Area of Special Archaeological Interest. Contains a number of Scheduled Monuments.
ARM 012:068	North Meridian Marker set up in the late 19th century consisting of a stone arch and iron obelisk. **State Care Monument.**
ARM 007:001	Two crosses in a multi period graveyard. **State Care Monument.**
HB15/12/006	Footbridge over the Blackwater Navigation. **Listed Building Grade B**.
HB15/12/004 & HB15/12/005	Post-Medieval Lockhouse, **Listed Building Grade B1**, and lock and mooring post on Blackwater Navigation, **Listed Building Grade B**.

Appendix 12F Built Heritage

Tyrone to Cavan
400kV Interconnector Project

Built Heritage
Impact Assessment

Tullydowey House & Gate Lodges
Tullydowey Road
Blackwatertown

and

The Argory
Derrycaw
Moy

25 April 2013

submitted by
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CONTENTS

APPENDICES

1) INTRODUCTION

1.1 This report is written by Dawson Stelfox RIBA, RIAI, Accredited Conservation Architect on the instructions of AECOM Ltd, Consultant for NIE (Northern Ireland Electricity), applicants for the proposed Tyrone-Cavan Interconnector. It is a supplementary report to Chapter 12 (Cultural Heritage) of the Consolidated Environmental Statement submitted with the planning application, with the brief to address in detail the impact of the proposals on two listed buildings.

1.2 These are:

- No. 39 Tullydowey Road (Site 20 as shown on Figure 12.5, Appendix A), formerly the back gate lodge to Tullydowey House, this being identified by NIEA during the statutory consultation process a building impacted on by the proposals.

- The Argory (Site 84 and 84a as shown on Figure 12.5, Appendix A), a National Trust property, identified during the public consultation process by the National Trust who believe its setting is affected by the proposed interconnector infrastructure.

1.3 I am a qualified and accredited conservation architect (AABC & RIAI Grade 1) with some 30 years experienced in working with historic buildings. This includes six years service on the Historic Buildings Council, the statutory body responsible for advising NIEA on listing criteria and practice, and undertaking listed building assessment and survey work for NIEA and the Department of Heritage and Local Government in Ireland. I have prepared many historic building impact assessments for planning applications and consider myself suitably qualified and experienced to be able to authoritatively comment on this case.

1.4 I have been supplied with a comprehensive set of maps, drawings, photographs and photomontages by AECOM, relating to the proposed line of the interconnector in the vicinity of Tullydowey House and The Argory, supplemented by my own photographs of the sites, which I visited in September 2011, January 2012 and March 2012.

1.5 Chapter 12 of the Consolidated Environmental Statement deals with Cultural Heritage issues, one of which is the potential impact of the interconnector on listed buildings within the 1 km wide study area straddling the line of the proposed interconnector route. Six listed buildings or groups of buildings were identified and the impact assessed. This is summarised in Chapter 12 of the Consolidated Environmental Statement, and it concludes that only in the case of one listed building was there a 'moderate adverse' impact – that being No. 39 Tullydowey Road, a former rear gate lodge to Tullydowey House. I understand that NIEA have accepted this assessment and are satisfied that the proposed interconnector will not have a significant adverse impact on the other listed buildings in the study zone.

Subsequent to this, the National Trust raised concerns about the impact of the proposals on the setting of and the view from The Argory, one of their historic properties.

This report is confined to an analysis of the impacts on these two buildings identified as being potentially adversely impacted on by the interconnector infrastructure.

2) TULLYDOWEY HOUSE & LODGES

2.1 The NIEA Historic Buildings Database contains four entries in the vicinity of Tullydowey, on the south western outskirts of Blackwatertown.

HB 13/11/039 39 Tullydowey Road
HB 13/11/040 Tullydowey House
HB 13/11/041 Gate lodge to Tullydowey House – 49 Tullydowey Road
HB 13/11/ 040B Outbuildings to Tullydowey House

All the buildings are listed Grade B1 and were first recorded in 1981. They have not been subject to the NIEA 'Second Survey' and the record descriptions are brief. See Listing maps in Appendix E.

2.2 **Tullydowey House**

NIEA 1st survey record (1981) lists Tullydowey (Tullydoey) House as a 2 storey, 7 bay symmetrical gabled, slated house with three dormers (1912) and a projecting central porch bay, built onto an earlier (17th Century?) house which is 2 storey, gabled and slated and 8 bay asymmetrical, with lower ridge height and floor levels inside. Both parts cement rendered. Built by the Jackson family. Rowan, in 'North West Ulster' records that there is a plaque of 1783 affixed to the older part of the house. Set in extensive, well treed grounds. See Appendix D for extract from 'North West Ulster' and Appendix E for NIEA list record.

2.3 **Gate lodge to Tullydowey House – 49 Tullydowey Road**

This is the 'front' Gate Lodge to Tullydowey House, situated at the main entrance gates to the house, at the junction of the main Blackwatertown – Benburb Road and the Tullydowey Road, just on the outskirts of Blackwatertown. Datestone reading 'TJ 1793'. Seems to be in a very original condition.

2.4 **Outbuildings to Tullydowey House**

Ranges of stone outbuildings to the south and west of Tullydowey House, now mostly derelict. Rubble stone walls with segmental arches and sandstone voussoirs. Slated gabled and half hipped roofs.

2.5 **No. 39 Tullydowey Road**

This seems to have originally been the 'back' gate lodge for Tullydowey House but is now in separate ownership and has a name plaque of 'Marbill Cottage' built into the modern brick boundary wall.

NIEA recorded it in 1981 as a 'Picturesque but decaying single storey gate lodge with attic. Slated roof, rendered walls, some timbering and quoins. Side bay windows, dormer, brick chimney, diamond paned windows. Very decorative bargeboard, with motifs and inscription – *"Welcome", "Let us watch and be sober", "John Lawson 1844" and "God Speed".*

The house stands at a rear entrance to Tullydowey House, now seemingly little used, off Tullydowey Road, which at this point is a narrow lane used only for access to houses along the road and for agricultural purposes as it is a short loop off the main Blackwatertown – Benburb Road.
The house has been recently (2004) extended to the sides and rear, the extension being 3 – 4 times the size of the original house. Although this has generally been sympathetically designed with the use of natural slate in the roofs and rendered walls, the overall effect of the scale of the extension and the surrounding modern walls, garages and outbuildings is to significantly overwhelm the original gate lodge to the extent that the external historic interest is confined to the front gable elevation and the interesting and idiosyncratic bargeboard detailing.

3) THE ARGORY

3.1 The NIEA database contains four entries for The Argory:-

HB15/01/002 The Argory, 144 Derrycaw Road, Moy (Main House)
HB15/01/003 South Gate Lodge, 133 Derrycaw Road, Moy
HB15/01/004 Sunday School at The Argory
HB15/01/005 Lord Stewards House at The Argory

3.2 It is understood the issues raised by The National Trust relate to the view from and setting of the main house. This is listed Grade B+ and the database records the date of listing as 28th March 1979. It has not been subject to the NIEA 'Second Survey' and there is no database description.

3.3 However, as a National Trust property, The Argory is well recorded and it and the grounds are of high value. Full details are on the National Trust website but it should be noted that the extensive (130 ha) wooded estate overlooking the River Blackwater is of equal status to the house in terms of visitor enjoyment. The house was built in the 1820's and it was positioned high on a hill taking advantage of views west over the Blackwater and the countryside beyond. The gardens are on the Historic Garden Register (NIEA Register of Parks, Gardens and Demesnes of Special Historic Interest).

3.4 The view from the west, main, front of the house is considered to be the key view under consideration in this report.

4) RELEVANT PLANNING POLICY

4.1 The planning policy relating to proposals affecting listed buildings is contained within Planning Policy Statement 6 (PPS 6), which in turn is based on legislation in Articles 42-49 of The Planning (NI) Order 1991.

4.2 There are no physical alterations proposed to the listed buildings but consideration has to be given to Policy BH 11 'Development affecting the setting of a listed building':

"*The Department will not normally permit development which would adversely affect the setting of a listed building. Development proposals will normally only be considered appropriate where all the following criteria are met:*

a. the detailed design respects the listed building in terms of scale, height, massing and alignment;

b. the works proposed make use of traditional or sympathetic building materials and techniques which respect those found on the building; and

c. *the nature of the use proposed respects the character of the setting of the building*"

The full policy and explanation notes are reproduced in Appendix C.

4.3 What constitutes the 'setting' of a listed building is not defined on any map and is different from the 'pink wash' area or curtilage which may be defined by NIEA on their listing maps. See Appendix E for the Tullydowey listing map which shows the pink wash area. This indicates that the extension to No. 39 was within the 'pink wash' area and so therefore should have been subject to particular scrutiny, and the location of the proposed tower structures is outside the 'pink wash' areas. However the policy makes it clear that the 'setting' has to be defined on an individual, case by case, basis, looking at the particular circumstances and is not necessarily confined to the 'pink wash' area on the NIEA listing map.

4.4 An assessment of the impact of any proposal on the setting of a listed building inevitably involves subjective judgements but the policy contains a number of criteria to be used in any assessment. There is further guidance available in Historic Scotland and English Heritage documents which are referred to in the Environmental Statement. The English Heritage guidance refers to the definition of the 'immediate' and the 'extended' setting as part of the analysis of impact.

4.5 Given that No. 39 was a back gate lodge to Tullydowey House I believe it is possible to identify two levels of setting for the house.
The 'primary' or 'immediate' setting is the grounds that form the relationship between the road, entrance, gates, gate lodge, lane and the house / estate it serves, and the 'secondary' or 'extended' setting could be considered to be the rest of the land and grounds around the lodge which form its relationship to the wider countryside.
The listing map in Appendix E indicates clearly that relationship between the House and its two lodges.

4.6 The National Trust concern is specifically about the views out from the front of The Argory and its gardens. This point is covered in Para 6.29 of PPS6 which states
"Development proposals some distance from the site of a listed building can sometimes have an adverse affect on its setting e.g. where it would affect views of an historic skyline..."

5) ASSESSMENT OF IMPACT ON 39 TULLYDOWEY ROAD

5.1 The proposed interconnector consists of overhead cables (conductors) strung between large metal tower structures. There are two towers in the vicinity of Tullydowey, T 30 and T 31, as shown on drawing C1.9 in Appendix A. T 30 is approximately 40m in height and at its closest point is circa 122m from No. 39 Tullydowey Road.
T 31 is of similar height (40m) and circa 450m from No. 39 Tullydowey Road.

5.2 Photographs and photomontages C1.10, C1.12 and C1.13 (Appendix B) are included in the Consolidated Environmental Statement, showing the 'before' and 'after' images from key viewpoints in the area. Each of these is analysed below.

5.3 **C1.10**
These views are taken from standing at the junction of the back lane up to Tullydowey House and Tullydowey Road. The view looks southwest down the valley towards the River Blackwater. The lane in the foreground curls leftwards to the rear of Tullydowey House. The 'after' view shows Tower 31 in the middle distance and Tower 32 in the far distance, with the overhead lines to Tower 30 which is clearly seen above and behind the house, with the lines extended to Tower 29 to the right.

5.5 **C1.12**
This view is taken from the back lane heading up to the rear of Tullydowey House from the rear gate lodge looking west across the valley towards Benburb. The 'after' photograph shows Tower 32 on the left, Tower 31 left of centre and the lines extending out to Tower 30, out of sight to the right.

5.6 **C1.13**
This is from the same viewpoint as above, but with the camera swung north looking back down the lane towards No. 39 and the Tullydowey Road. Tower 30 is on the left, approximately 122m from No. 39 and Tower 29 just right of the laneway in the distance.

5.7 **Additional View**
This view was not included in the Environmental Assessment as the structures and lines do not appear in it but I consider it an important view in relation to defining the setting of No. 39. It is taken from Tullydowey Road, looking across the front gable of No. 39, along the line of the lane towards Tullydowey House and Outbuildings on top of the hill, amongst the trees. It shows the relationship between the 'back' gate lodge and the house, which is the primary relationship and setting of any gate lodge. It is, in my opinion, notable, that the proposed tower structures and lines do not interrupt this view and this relationship. Whilst the proposed structures and lines do not have an impact on what I consider to be the 'primary' or 'immediate' setting of the listed building, they clearly do have a negative impact on the wider or 'extended' setting.

5.8 I have also reviewed the construction access works drawing (see Chapter 5 of the Consolidated Environmental Statement) and note the access to Towers 30 and 31 is from the rear of the line when viewed from No. 39 Tullydowey Road. I do not see any significant impact on the setting of Tullydowey House or the lodge at No 39 Tullydowey Road as a result of the construction works.

5.9 Potential mitigation of the impact of an overhead line could be considered at both 'macro' and 'micro' levels.

5.10 The overall 'macro' siting – i.e. the general alignment of the route – is outside the scope of this document, but I note that there are clusters of historic buildings in both Benburb and Blackwatertown and any significant movement either east or west of the proposed route would be likely to have an impact on these listed buildings.

5.11 Within the 1 km wide corridor – the 'micro' siting, the current proposed route follows a valley up from the Blackwater and is thus enclosed within the landscape as much as it is possible to achieve. If moved eastwards it would be even closer to Tullydowey House and No. 39. If moved westwards it would climb up onto a ridge of higher ground and it would have a much greater visible impact on No. 39 but also in a wider visual context. I would thus conclude the general alignment of the route within this 1km corridor is the best option in terms of impact on historic buildings and structures.

5.12 Any minor movement of the location of Tower 30, north or south, will not result in any significant change to the impact.

5.13 Use of trees or vegetation to screen the impact is impractical given the height of the tower.

5.14 I thus conclude that there are unlikely to be any achievable changes to the overhead line that could significantly mitigate the impact on the extended setting of No. 39 Tullydowey Road.

6) ASSESSMENT OF IMPACT ON THE ARGORY

6.1 Viewpoint 5 in the Consolidated Environmental Statement is from Bonds Bridge near the Argory and is an accurate portrayal of the view towards the new substation and line, the nearest point of which is approx. 1.2 km away and behind the existing HV lines shown in the photographs.

6.2 The Argory sits on an elevated site surrounded by tall trees but a deliberate vista has been created along the line of the Blackwater River which faces West, almost directly looking at the proposed new substation. Photographs show how the existing towers are more prominent from the elevated house site than at river level in VP 5.

6.3 This view is restricted by tree screening which, along with a slight ground level rise between The Argory and the substations, means the substation and Tower 1 will not be visible from The Argory and its environs. Tower 2 and Tower 3 will be visible at 1.6 km and 1.9 km distance respectively. Beyond this, distance, screening and intervening ground will combine to obscure the line of towers.

6.4 The existing HV line (at a distance of 0.9 km) will be a more significant landscape intrusion that the proposed new line, not only because it is 300 m closer to The Argory but also its towers are over 50 m in height whereas the proposed new towers are around 30-40m in height (T1 = 31m, T2 = 33m, T3 = 41m).

6.5 It is thus reasonable to conclude that the proposals will not have a significant impact on the main vista from The Argory.

6.6 I have also examined the access works drawing (see Chapter 5 of the Consolidated Environmental Statement) in connection with the construction of Towers 1, 2 and 3. This is largely along existing farm tracks which are not visible from The Argory and I do not believe they will have any impact on the views from or setting of The Argory.

View from front of the Argory looking along the Blackwater. Existing HV tower in distance (approx./ 0.9 km). Proposed line is to the right of this at minimum 1.6km distance.

View to right of front entrance. View of line and substation obscured by dense vegetation (winter photograph).

Close up view from front garden. Existing HV tower (50m high, 900m distance). Proposed line is to right (30m high, 1600m distance).

7) CONCLUSIONS

7.1 No. 39 Tullydowey Road is a listed building which has been significantly altered by large extensions and alterations, diminishing its architectural character and importance. It was the 'back' gate lodge for Tullydowey House but has only a tenuous visual connection with it now, rather than an ownership or functional connection.

7.2 The 'primary' or 'immediate' setting of No. 39 is the entrance, back lane and lands framing the visual connection between the lodge and house. The 'secondary' or 'extended' setting is the wider lands and landscape around the house.

7.3 I do not believe the proposed Inter-connector has an adverse effect on the 'immediate'' setting of No. 39, but it clearly has an adverse impact on the extended setting of the house. I would agree that the overall impact, as defined in Chapter 12 of the Environmental Statement, could be considered as 'moderate adverse'.

7.4 There are no obvious significant mitigation measures possible within this general alignment of an overhead line and so the impact on the extended setting of No. 39 is unlikely to be reduced.

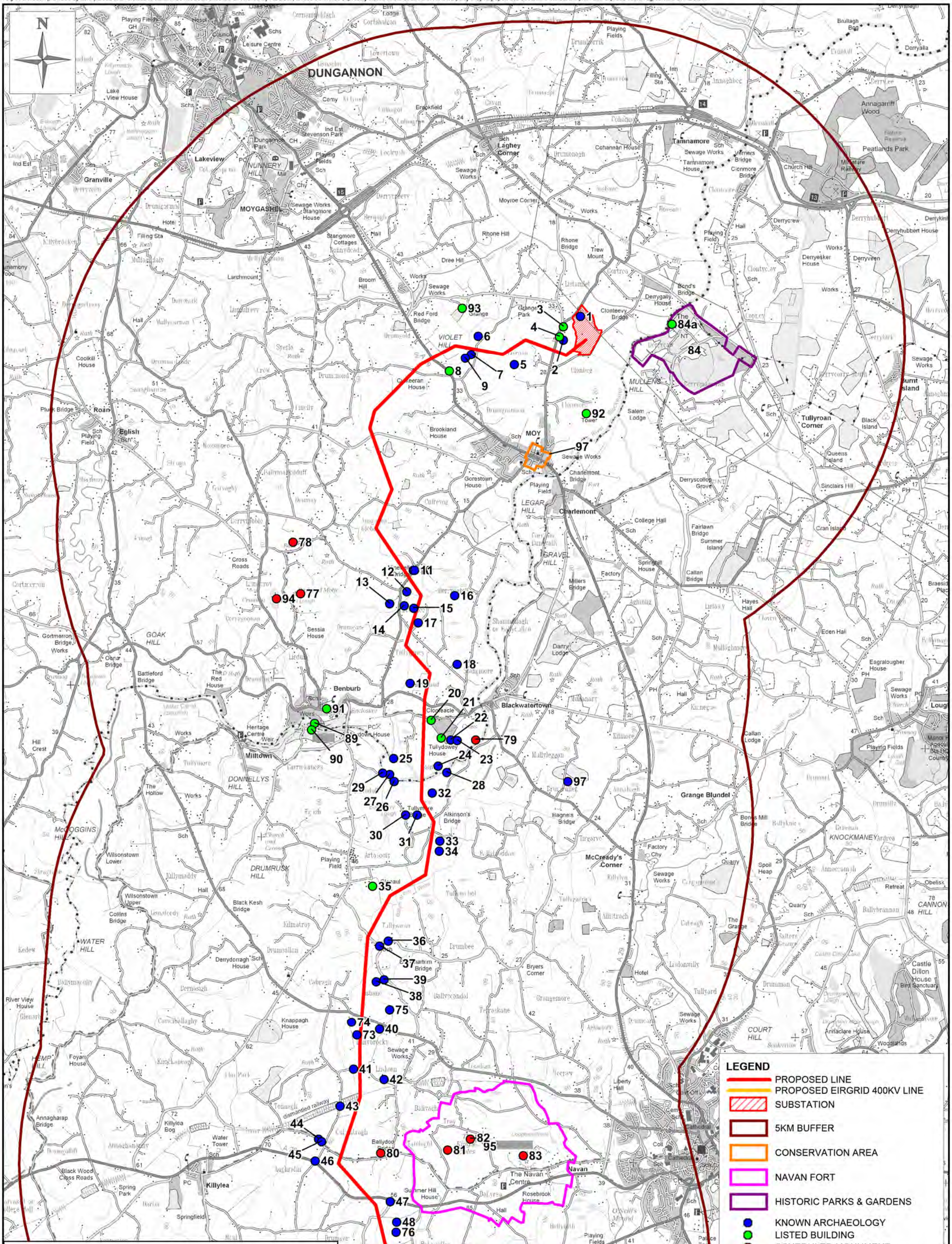
7.5 Ultimately, it is for the Department or PAC to make a judgement on whether the extent of impact on the extended setting of one listed building, already compromised in heritage terms by its own extensions, is so significant as to be a reason for refusal of such a major piece of national infrastructure.

7.6 The view from the front of The Argory is an important part of the setting of the house, dominated by the River Blackwater and framed by groups of mature woodland. However the view already includes significant electricity infrastructure in the middle distance and the proposed line is both further away from and lower in height than existing towers. The sub-station is not visible. I do not believe the proposed infrastructure will have any significant negative impact on the view from or setting of The Argory and would agree with the overall impact as 'slight adverse' as set out in Chapter 12 of the Environmental Statement.

Dawson Stelfox
Consarc Design Group

Appendix A

Map


N
DUNGANNON
MOYGASHEL
Lakeview
Granville
Eglish
Roan
Laghey Corner
Tamnamore
Peatlands Park
Annagarriff Wood
MOY
Charlemont
Blackwatertown
Benburb
Milltown
Killylea
Navan
The Navan Centre
Grange Blundel
McCready's Corner
Tullyroan Corner
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LEGEND
PROPOSED LINE
PROPOSED EIRGRID 400KV LINE
SUBSTATION
5KM BUFFER
CONSERVATION AREA
NAVAN FORT
HISTORIC PARKS & GARDENS
KNOWN ARCHAEOLOGY
LISTED BUILDING
SCHEDULED MONUMENT

Client: Northern Ireland Electricity

Project: **TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES**

Title: AFFECTED SITES IN WIDER STUDY AREA - MAP 1 OF 2

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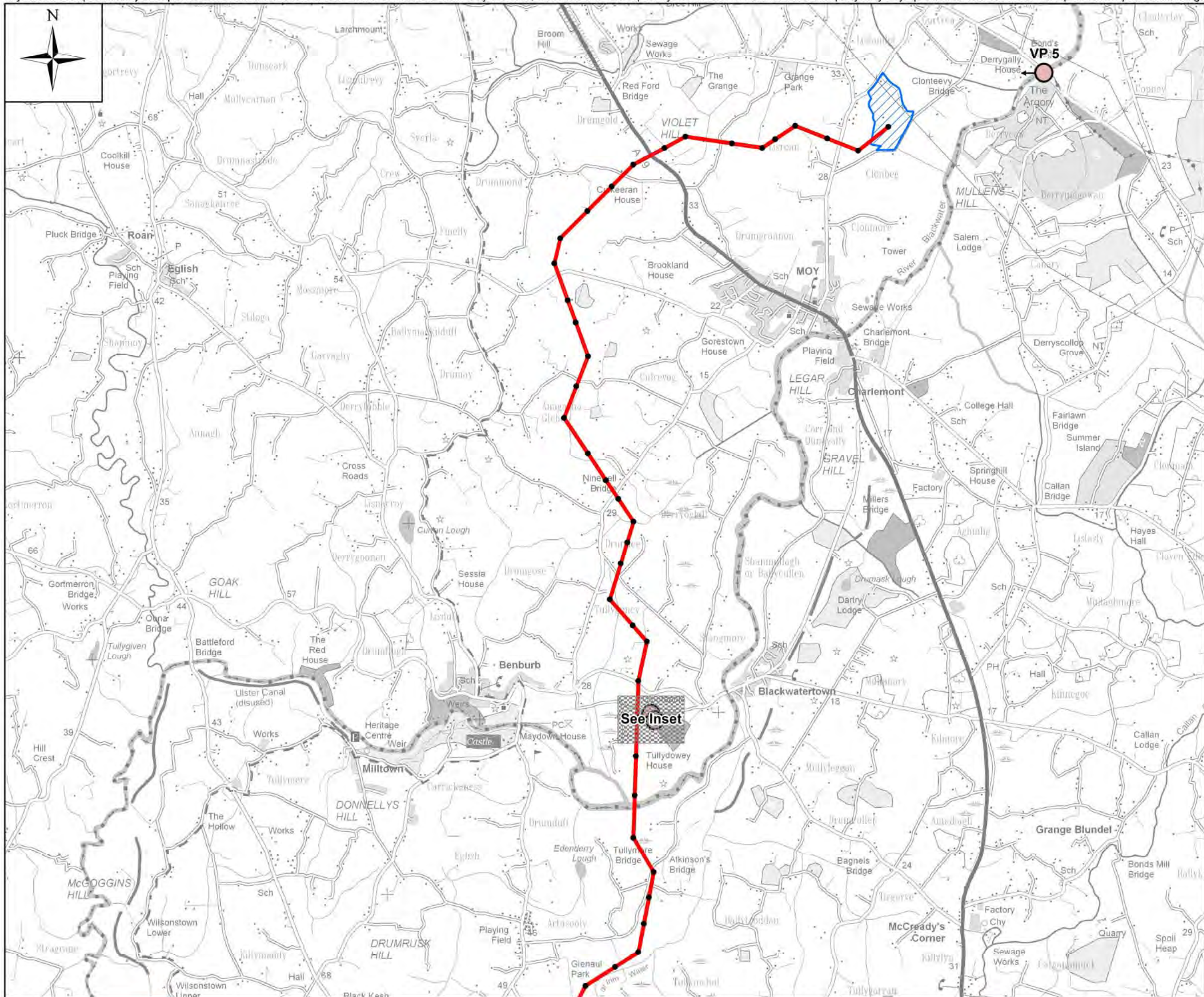
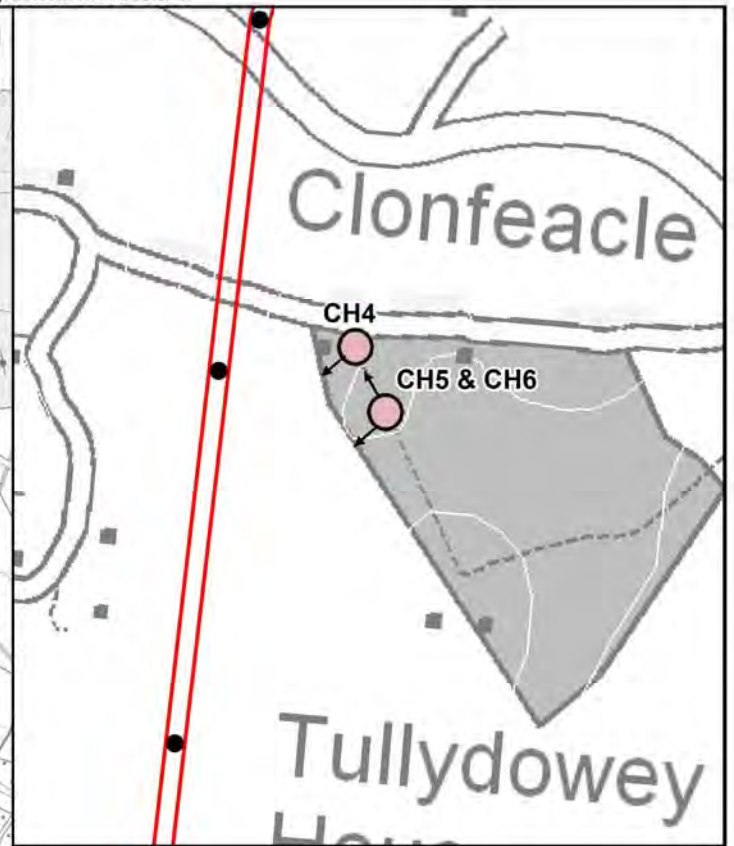
Design: DAM	MapInfo: DAM
Chk'd: HRM	App'd: FL
Date: 18/02/2012	Scale: 1:25,000 @ A3
No: 60032220/3558/FIGURE 12.5	

Appendix B

Photographs, Photomontages and drawings





KEY:

- Proposed Towers
- Viewpoints
- Proposed 400kV Overhead Line
- Proposed Substation Site

VP	Location	E	N
VP 5	Bonds Bridge over River Blackwater near the Argory	287261	358567
CH4	View of the Grade B1 listed Gate Lodge for Tullydowey House and adjacent access track, facing south west	283268	352046
CH5	View south west of land adjacent to the Grade B1 listed Tullydowey House	283305	351981
CH6	View north west along the access track from the Grade B1 listed Tullydowey House towards the Grade B1 listed Gate Lodge	283305	351981

0 1,500 Metres

Client: Northern Ireland Electricity	Title: VIEWPOINT LOCATION PLAN SHEET 1 of 1	AECOM 9th Floor The Clarence West Building 2 Clarence Street West BELFAST, BT2 7GP Tel +44 (0) 28 9060 7200 Fax +44 (0) 28 9060 7399 www.aecom.com	Design: SM — Drawn: SM Chk'd: FL — App'd: FL Date: APRIL 2013 — Scale at A3: 1:40,000 Drawing Number: Built Heritage Report/1 — A3
Project: TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES			

Baseline Photograph

Photomontage

*Distances to towers are approximate and may not be the closest tower within the view represented by the photomontage i.e. the closest tower may in fact be behind the viewer in some cases.

Client: Northern Ireland Electricity	Title: VIEWPOINT 5 PHOTOMONTAGE	AECOM 9th Floor The Clarence West Building 2 Clarence Street West BELFAST, BT2 7GP Tel +44 (0) 28 9060 7200 Fax +44 (0) 28 9060 7399 www.aecom.com	Modelling by: MC3D Layout by: LW	Grid ref of viewpoint: E287261, N358567
			Horizontal Field of View: 90°	Distance to nearest tower in view*: 1670m
Project: TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES			Date: MARCH 2013	Height of viewpoint: 18m AOD
			Drawing Number: Figure 13.8e	A3

Before

After

Client: Northern Ireland Electricity	Title: Viewpoint: CH4 View of the Grade B1 listed Gate Lodge for Tullydowey House and adjacent access track, facing south west	AECOM 9th Floor The Clarence West Building 2 Clarence Street West BELFAST, BT2 7GP Tel +44 (0) 28 9060 7200 Fax +44 (0) 28 9060 7399 www.aecom.com	Modelling by: MC3D Layout by: SM	Grid Ref. of VP: E283268, N352068
Project: TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES			Horizontal field of View: 90°	Distance to nearest tower: 140m
			Date: MARCH 2013	Height of Viewpoint: 28m
			Drawing Number: Figure 12.12	A3

Before

After

Client: Northern Ireland Electricity Project: TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES	Title: Viewpoint: CH5 View south west of land adjacent to the Grade B1 listed Tullydowey House	AECOM 9th Floor The Clarence West Building 2 Clarence Street West BELFAST, BT2 7GP Tel +44 (0) 28 9060 7200 Fax +44 (0) 28 9060 7399 www.aecom.com	Modelling by: MC3D Layout by: SM Horizontal field of View: 90° Date: MARCH 2013 Drawing Number: Figure 12.13	Grid Ref. of VP: E283311,N351969 Distance to nearest tower: 180m Height of Viewpoint: 31m A3

Before

After

Client: Northern Ireland Electricity	Title: Viewpoint: CH6 View north west along the access track from the Grade B1 listed Tullydowey House towards the Grade B1 listed Gate Lodge	AECOM 9th Floor The Clarence West Building 2 Clarence Street West BELFAST, BT2 7GP Tel +44 (0) 28 9060 7200 Fax +44 (0) 28 9060 7399 www.aecom.com	Modelling by: MC3D Layout by: SM Horizontal field of View: 90° Date: MARCH 2013 Drawing Number: Figure 12.14
Project: TYRONE-CAVAN INTERCONNECTOR CONSOLIDATED ES			Grid Ref. of VP: E283311,N351969 Distance to nearest tower: 180m Height of Viewpoint: 31m A3

PHOTO 6 View up lane to Tullydowey House.

PHOTO 5 Original lodge with extension behind.

PHOTO 4 View down house to lodge.

Photo 1 ALTERNATIVE VIEW View past front of lodge looking up lane to Tullydowey House.

Photo 3 View from lane showing extensions.

PHOTO 2 Original lodge to left with 2004 extensions to right

status	Built Heritage Impact Assessment
date	September 2011
scale	NTS
drawn / checked / approved	NH / DS / DS

client	AECOM LTD
project	North South Interconnector
content	Photographs
job no / drawing no / revision	BC10-999 / - / -

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Appendix C

PPS 6, Policy BH 11

Planning, Archaeology and the Built Heritage

Nothing in this document should be read as a commitment that public resources will be provided for any specific project. All proposals for expenditure by the Department are subject to economic appraisal and will also have to be considered having regard to the overall availability of resources.

Policy Explanation

The planning policies of this Statement outline the main criteria that the Department will employ in assessing proposals which affect the archaeological or built heritage. These policies however should not be read as the only tests of acceptability for such development proposals. In making its decisions the Department will assess proposals against all planning policies and other material considerations that are relevant to it. The policies of this Statement must therefore be read in conjunction with the relevant contents of the Department's other policy publications, including existing PPSs, development plans and the extant policies contained in the Department's document "A Planning Strategy for Rural Northern Ireland" published in September 1993.

The inclusion of the word "normally" is considered necessary by the Department in many instances to ensure that there is no public misunderstanding of its planning policies. It is generally recognised that occasionally there will be circumstances where other material considerations may outweigh these policies. In particular the Department recognises that where a policy is a negative definition, i.e. stating what will not be permitted, such a policy provides a general guideline but cannot be an absolute bar to a decision beneficial to the citizen. Each case must be considered on its merits to see whether an exception would be justified. The Department therefore considers it important to retain the word "normally" in many of its policies in order that the public clearly understand that exceptions can on occasion be made.

Policy BH 11
Development affecting the Setting of a Listed Building

The Department will not normally permit development which would adversely affect the setting of a listed building. Development proposals will normally only be considered appropriate where all the following criteria are met:

(a) the detailed design respects the listed building in terms of scale, height, massing and alignment;

(b) the works proposed make use of traditional or sympathetic building materials and techniques which respect those found on the building; and

(c) the nature of the use proposed respects the character of the setting of the building.

Justification and Amplification

6.28. The setting of a listed building is often an essential part of the building's character. This is particularly the case where a demesne, landscaped parkland, garden or grounds have been laid out to complement the design or function of the building. The economic viability as well as the character of listed buildings within such planned settings may suffer where inappropriate new development isolates them from their surroundings or degrades their landscape setting. This can effectively rob such buildings of much of their interest and the contribution they make to the local countryside or townscape. Where a listed building has no ancillary land, for example in a town or village street, its setting may include a number of other properties or even the whole street. These buildings may not necessarily be of great individual merit but combine to produce a visual harmony which enriches the setting of the listed building.

6.29. Any proposals for development which by its character or location may have an adverse affect on the setting of listed buildings will require very careful consideration by the Department. This will apply even if the development would only replace a building which is neither itself listed nor immediately adjacent to a listed building. Development proposals some distance from the site of a listed building can sometimes have an adverse affect on its setting e.g. where it would affect views of an historic skyline, while certain proposals, because of the nature of their use, can adversely affect the character of the setting of a listed building or group of buildings through noise, nuisance and general disturbance.

6.30. The design of new buildings planned to stand alongside historic buildings is particularly critical. Such buildings must be designed to respect their setting, follow fundamental architectural principles of scale, height, massing and alignment and use appropriate materials. This does not mean however that new buildings have to copy their older neighbours in detail. Some of the most interesting streets in our towns and villages include a variety of building styles, materials and forms of construction of several different periods, which together form a visually harmonious group.

6.31. The extent to which proposals will be required to comply with the criteria in Policy BH 11 will be influenced by a variety of factors: the character and quality of the listed building; the proximity of the proposal to it; the character and quality of the setting; and the extent to which the proposed development and the listed building will be seen in juxtaposition.

6.32 Where it is considered that a development proposal may affect the setting of a listed building the Department will normally require the submission of detailed drawings which illustrate the relationship between the proposal and the listed building. Where appropriate the Department will use its powers contained in the General Development Order to request applicants to supply such additional information on the proposed development as is considered necessary to allow proper determination.

Appendix D

Excerpt from “North West Ulster” by Alistair Rowan

and the doors have lugged surrounds. All this looks like the work of George Ash, who owned the house in 1777.

BEECH HILL. 2 km SE. A complex and very curious jumble dating apparently to 1729 at its SE end, where three old Georgian sash windows and a side door have convincing early C18 proportions. From this, which must have been the regular and simple front of the Skipton family house, projects a massive late C19 *porte cochère* with heavy oriel windows on three sides above the carriage arch and a hipped slate roof with a timber clerestory. On the other side of the *porte cochère* the continuation of the C18 house front, with bigger windows, dates from 1851, with a still later picturesque Italianate addition behind. The house was bought in 1875 by Edward Nicholson and altered by his son Thomas in 1898 to designs of *R. E. Buchanan* of Derry, who added the attic floors at the E end. Inside, the library of 1851 is a gargantuan classical hall arcaded down each side with heavy Doric pilasters and a monster frieze filled with very life-like and large ox-heads taken no doubt from Stuart and Revett.

The house is set in a formal avenue, partly remaining, with limes to the S and beeches to the N. GATE LODGE of the 1870s, heavily Picturesque, with a slated rubble tower.

ARDMORE HOUSE. 2 km SE. A three-bay, two-storey Regency villa, with tripartite windows on the ground floor and a veranda that breaks forward to form a glazed octagonal porch. Exceptionally pretty Tuscan conservatory. Built for John Acheson Smyth *c.* 1810.

GLENKEEN HOUSE. 2.5 km SE. An ample four-bay, two-storey house of about 1790, the middle two bays curving in a segmental bow. Tuscan columned entrance in the centre.

THE OAKES. 6 km SE, across the river. A large-scale stuccoed house built by the Lyle family and remodelled, as it now appears, to designs of *John McCurdy* for Acheson Lyle in 1867. Two-storey, with a three-bay entrance front with an Ionic columned porch, and a five-bay garden front with central pediment. Big plaster ceilings inside.

GORTNESSY LOWER PRESBYTERIAN CHURCH. 4.5 km ENE. 1841. A five-bay gabled hall with round-headed windows. Flat pine ceiling and box pews inside.

GORTNESSY CROSSROADS SCHOOL. 4.5 km ENE, on Gorteen Hill. 1831. A plain harled building decorated with a lively sculptured panel of a camel with a wool pack. Built by whom?

CLONFEACLE TY *J8*

The site of an early Irish monastery of which St Lugad was abbot in 597. The name – church of the tooth (*fiacul*) – is traditionally associated with one of St Patrick's teeth that was preserved here. The monastery was later vested in the Culdees and granted to Primate Hampton in 1614.

CLONFEACLE CROSS. In St Patrick's churchyard. This cross, some 4 ft high, may be unfinished. It is of an unusual pattern, with the ring recessed on one face and attached to the arms by short brackets. The workmanship is crude and the base shaft fatter than the head.

ST PATRICK. Mid C19. A three-bay rendered hall with timber Y-tracery windows. Gable façade. Kingpost trussed roof. – GRAVESTONE. In the churchyard a curious stone shaped like a bow tie on its end, with a bell and a face on the back. To James Givern. IHS 1688.

TULLEYDOEY HOUSE. A not quite regular façade of seven bays with a projecting centre bay. Built by the Jackson family. Of various dates: parts are possibly late C17 or early C18. Lugged door surrounds inside, brick-vaulted basement in parts, and a substantial stair with three banisters per tread. A lead Phoenix Assurance plaque of 1783 is affixed to the old part of the house. – GATE LODGES. One dated T.J. 1793, the other a picturesque cottage of 1843 with large bargeboards inscribed 'Let us watch and be sober', 'Welcome and God speed', 'John Lawson 1844'.

See also Benburb.

CLONMANY DO *F1*

A parish and small village remotely situated near the top of the Inishowen peninsula. Memorable for its trim C19 houses and tapering Diamond, closed by a charming Market House.

ST MARY. A big T-plan building, painted and rendered, with a square stone tower asymmetrically placed at the S end of the T. The church appears to date from *c.* 1810 and was enlarged in 1833; the tower was added in 1843. The earliest stone in the churchyard is the grave of the parish priest, Charles O'Haggerty, who built the church and who died aged twenty-nine in 1820.

MARKET HOUSE. A nice little building that deserves to be better looked after than it was at the time of writing. Chaste yet robust,

Appendix E

NIEA Listing Record

Ref	Ordnance Survey Map Numbers 1 inch : 25 inch		Irish Grid Reference	Building	Date of Erection	Comment	Bibliographical Reference
3/ /21				Chapel* Benburb TL		This is located in the grounds of the Servite Priory, Benburb.	OS Map of 1833
2/ /26	7	179/6	748578	7 Kilnacart Road and gates Drumnashalog TD formerly Greystone Rectory	1822	2-storey with basement, hipped roof, rubble masonry. Brick dressings informal classical composition. Also 2-storey stable block and entrance gates.	OS Map of 1833 Rowan UN Ulster P7 Leslie "Armagh Clergy and Parishes"
1/ 11/27		179/9	776581	St Columba's C of I* Killybracken Road Derrygortreevy TD	1815	3-bay hall with 3 stage belfry tower, west end over entrance. Minimal Gothic detail - prominently sited on a rath.	OS Map 1833
/ 11/33		173/15	804556	School House Derryfubble Road Derryfubble TD		2 school rooms, slated, stonebuilt with cut stone dressings.	
11/39		198/8	832520	39 Tullydowey Road Tullydowey TD	1843	Picturesque 1½-storey dwelling.	Datestone Rowan "NW Ulster" P197
11/40		198/8	834517	15 Tullydowey Road Tullydowey House Tullydowey TD	Series of develop-ments from 1700/ 1912	2-storey with attics, symetric main front. Built onto an earlier dwelling with a later return.	OS Map 1833 Rown "NW Ulster" P197

NB: Buildings marked * are buildings to which certain provisions of Article 32 of the Planning (Northern Ireland) Order 1972 do n appply in relation to alterations or extensions.

Buildings marked ∅ are buildings to which certain provisions of Article 32 of the Planning (Northern Ireland) Order 1972 do apply being brown buildings.


Tullydowey Cottage
Lodge
Well
Well
Well
TULLYDOWEY
SD
Tullydowey House
Pond
Lodge
Cross
BM 24 12
Lavs
Path
Grave Yard

PLAN 1978

Appendix 13A Individual Properties Assessment Table

13A Individual Properties Assessment Table

As explained in section 13.6.2.2 of Chapter 13, Individual Properties identified within the detailed study area of 500m either side of the line route have been assessed for potential effects as a result of the proposed development during construction and at year 1 and year 15. This detailed 500m study area has been divided into ten sections and following the line route from north to south is represented by section 'A' in the north to section 'J' in the south. A total of 427 properties were identified and assessed as follows:

- Property Receptors A1 - A24 (Substation and Towers 1-8)
- Property Receptors B1 - B43 (Towers 9-19)
- Property Receptors C1 - C63 (Towers 20-30)
- Property Receptors D1 - D36 (Towers 31-40)
- Property Receptors E1 - E60 (Towers 41-51)
- Property Receptors F1 - F33 (Towers 52-61)
- Property Receptors G1 - G42 (Towers 62-71)
- Property Receptors H1 - H44 (Towers 72-81)
- Property Receptors i1 - i27 (Towers 82-92)
- Property Receptors J1 - J62 (Towers 93-102)

The table in this appendix shows the assessment of each property which are also identified on Figure 13.7. Properties which had not been included within Addendum 11.1 Individual Properties Field Assessment published in 2011 have been identified numerically, with a '+'.

Planning approval has been given to the 11 following individual properties. As construction of these properties had not at the time of assessment been completed, potential effects were assessed as worst case scenario which assumes these 11 properties would have ground floor windows which face the Proposed Development with no screening from garden vegetation to filter views . These 11 properties are listed as follows: D11+, E8+, E10+, E11+, E31+, H10+, H11+, H14+, H41+, J25+ at time of assessment, had planning approval but not yet built. Individual property receptor C64 was under construction, not completed. Several properties located in the Republic of Ireland have the potential to be influenced by the proposed NIE overhead line and towers. There are properties identified as J50, J51, J51+, J52 and J62. In addition, a total of 27 properties were excluded from the assessment as they were found to be derelict or farm buildings. The properties within this category are as follows:- A25, B11, B27, B28, B43, C2, C8, C11, C23, D36, E2, E41, E59, F1, F6, F9, F13, F30, G2, G15, G35, H8, H44, I2, I22, I23, J45.

The following abbreviations have been used in the table –

O - Oblique (used in relation to Nature of View)

D - Direct (used in relation to Nature of View)

F - Filtered (used in relation to Nature of View)

S - Screened (used in relation to Nature of View)

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
Property Receptors A1 - A24 (Substation and Towers 1-8)							
A1	O	Low	Moderate Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A2	D	High	Major Adverse	High-Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse
A3	O,F	Low	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A4	O,F	Low	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A5	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
A6	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A7	O	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A8	O	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A8+	D	High	Major Adverse	High	Major Adverse	High	Major Adverse
A9	D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
A10	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A11	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
A12	D	High – Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse
A13	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
A14	O,F	Low	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A14+	O,F	Low	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A15	O,F	Medium	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
A16	O	Low	Moderate Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A17	D	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
A18	O	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A19	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
A20	D, O	Medium	Moderate Adverse	High-Medium	Mod- Major Adverse	High-Medium	Mod- Major Adverse
A21	D	High – Medium	Mod-Major Adverse	High- Medium	Mod-Major Adverse	High- Medium	Mod-Major Adverse
A22	D	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
A23	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
A24	D	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
A25	D	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
Property Receptors B1 - B43 (Towers 9-19)							
B1	D,O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B3	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B4	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B5	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
B6	O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B6 +	O, S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B7	O, S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B7 +	O, S	No Change	No Effect	No Change	No Effect	No Change	No Effect
B8	D/O S	Low	Moderate Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
B9	D,O S	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
B9+	D,O	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B10	O,F	Low – Negligible	Minor-Mod Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B11	S	No Change	No Effect	No Change	No Effect	No Change	No Effect
B12	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B13	D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B14	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B15	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B16	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B17	O,S	No Change	No Effect	No Change	No Effect	No Change	No Effect
B17+	O,S	No Change	No Effect	No Change	No Effect	No Change	No Effect
B18	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B19	D,O	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B20	D,O	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
B21	O,F	Low	Moderate Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B23	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B23+	D, S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B24	O,F	Low – Negligible	Minor-Mod Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B25	O,F	Low – Negligible	Minor-Mod Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B26	O, S	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
B29	D	High-Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B30	D	High-Medium	Mod-Major Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
B30+	D	High-Medium	Mod-Major Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
B31	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
B32	D, F	Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
B33	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
B35	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
B35+	O, S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B36	D	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B36+	D	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
B39	D	Low	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
B40	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B41	D, O, S (DOF)	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
B42	D,O,F	Negligible	Minor Adverse	Low	Moderate Adverse	Low	Moderate Adverse
Property Receptors C1 - C63 (Towers 20-30)							
C1	O & D,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C2	O & D,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C3	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C4	D,F	Medium	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
C5	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
C6	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C7	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
C8	O, F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C9	D,O,F	High-Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse
C10	D,O,F	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse
C12	D,O, F	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C13	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C14	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
C15	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C16	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C17	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C18	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C19	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
C20	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C21	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C22	D,O,S	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
C23	D+D,O,F	High	Major Adverse	High	Major Adverse	High	Major Adverse
C25	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C25+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C26	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C26+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C28	D,F	High – Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse
C29	D,F	High – Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse	High-Medium	Mod-Major Adverse
C30	D,O,F	Medium	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
C31	D,O,F	High – Medium	Mod-Major Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C32	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
C33	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C34	D,F	High - Medium	Mod-Major Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
C35	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C37	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C38	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C39	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C40	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C41	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C42	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C43	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C44	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C45	O	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse
C46	O	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
C47	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C48	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C49	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C50	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C51	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C52	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C53	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C54	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C55	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C56	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C57	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C58	D, O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C60	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
C61	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C62	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C63	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
C64	O, F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
C65	D, F	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse
C66	O	High – Medium	Mod-Major Adverse	High	Major Adverse	High	Major Adverse
Property Receptors D1 - D36 (Towers 31-40)							
D1	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D2	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D3	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D4	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D5	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D6	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
D7	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D8	O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
D8+	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D9	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
D10	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D11	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D12	O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
D12+	O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
D13	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
D14	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
D15	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D16	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D17	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
D18	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D19	D,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
D20	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D21	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D23	O	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
D24	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
D25	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
D26	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
D27	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D28	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D29	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D30	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D30+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	Nature Of View	Magnitude of Change (Construction)	Impact (Construction)	Magnitude of Change (Year 1)	Impact (Year 1)	Magnitude of Change (Year 15)	Impact (Year 15)
D31	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
D32	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D32+	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
D33	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
D34	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
D35	D, O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
Property Receptors E1 - E60 (Towers 41-51)							
E1	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
E3	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E4	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E5	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
E6	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
E7	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
E8	D+D	High	Major Adverse	High	Major Adverse	High	Major Adverse
E8+	D,O	High	Major Adverse	High - Medium	Moderate-Major Adverse	High - Medium	Moderate-Major Adverse
E9	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E10	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E10+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E11	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E11+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E12	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E13	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E15	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E16	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E18	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E19	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
E20	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E22	D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
E23	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
E24	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E25	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E26	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
E27	D	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
E28	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
E29	O	Low - Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
E30	D,O	Negligible	Minor Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E31	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E31+	D,O, F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E33	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
E34	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E35	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E36	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E37	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E40	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E43	D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
E44	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E45	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E46	D,F	High - Medium	Mod-Major Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E47	D,O	High - Medium	Mod-Major Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E49	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E49+	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E50	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
E52	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
E53	D	Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
E53+		Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
E54	D,O	Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
E55	O	Low	Moderate Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
E56	D	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
E57	O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
E58	D+D,O,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
E60	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
Property Receptors F1 - F33 (Towers 52-61)							
F1	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F2	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F3	D,O,F	Medium - Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
F4	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F5	O	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
F6	D	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse
F7	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F8	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
F10	D+D,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
F11	D+D,O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F12	D+D,O	Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
F15	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F16	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F18	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F19	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
F20	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
F22	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F23	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F24	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F24+	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F25	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
F26	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F26+	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F27	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F27+	O, F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F28	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F28+	O, F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
F29	O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
F31	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
F31+	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F32	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
F33	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
Property Receptors G1 - G42 (Towers 62-71)							
G1	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G1+	D, S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G3	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G4	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G5	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G6	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G7	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G8	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G9	D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
G10	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
G11	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G12	O	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Mod Adverse
G13	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G14	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G16	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G17	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G18	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G18+	O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G19	D+D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G19+	D, O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G20	D+D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G21	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
G23	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G24	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G25	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G26	D,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G27	O,F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G28	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
G30	D,O	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse
G32	D, O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G33	D, O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G34	D,O,S	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G35	O, S	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G36	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G37	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse

Property Receptor ID	Nature Of View	Magnitude of Change (Construction)	Impact (Construction)	Magnitude of Change (Year 1)	Impact (Year 1)	Magnitude of Change (Year 15)	Impact (Year 15)
G39	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
G40	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
G41	D,O	Medium	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
G42	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
G42+	D, O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
Property Receptors H1 - H44 (Towers 72-81)							
H2	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H3	D	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H5	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
H6	D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
H7	D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
H9	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H10	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
H10+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H11	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H11+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H12	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H12+	S	No change	No effect	No change	No effect	No change	No effect
H13	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
H14	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
H14+	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H15	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H16	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H17	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H18	O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H19	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
H21	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H22	D+D,O,F	High	Major Adverse	High	Major Adverse	High	Major Adverse
H23	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
H24	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H26	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H27	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H28	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H29	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H30	D,O	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H32	D,O,S	No change	No effect	No change	No effect	No change	No effect
H33	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H34	D,O,F	Medium	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H35	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
H36	D+D	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse
H38	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H39	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
H40	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H41	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H41+	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H42	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
H42+	D	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
H43	O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
Property Receptors i1 - i27 (Towers 82-92)							
i1	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
i3	D+D,O	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
i3+	S	No change	No effect	No change	No effect	No change	No effect

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
i4	D+D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
i5	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
i6	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
i7	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
i7+	D+D,O	High	Major Adverse	High	Major Adverse	High	Major Adverse
i9	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i10	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i12	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i13	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
i14	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
i15	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i16	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i18	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
i19	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i20	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i21	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i24	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
i25	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
i26	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
i27	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
Property Receptors J1 - J62 (Towers 93-102)							
J1	D,O	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J1+	O	Low	Moderate Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J2	O,F	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J3	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
J4	D,O, F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
J4+	D, O, F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J5	D,O	High -Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J6	O,S	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J7	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J8	D,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J9	O,F	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J10	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J12	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J13	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J14	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J15	D,O	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse
J16	D,O	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J18	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
J19	D,S	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J20	D,S	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J22	D,O	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
J23	D,O	Medium - Low	Moderate Adverse	Medium - Low	Moderate Adverse	Medium - Low	Moderate Adverse
J25	D	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J25+	D	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J26	D,F	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse
J26+	D,F	Low – Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse	Low - Negligible	Minor-Mod Adverse
J27	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J28	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J30	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J31	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J32	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
J33	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J34	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J35	D,O	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse
J35+	D,O, F	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse	Low – Negligible	Minor-Mod Adverse
J36	O	Low - Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J37	D	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J38	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J39	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J40	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J41	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J42	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J43	D,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J44	O, F	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
J44+	O, F	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse	High – Medium	Mod-Major Adverse
J46	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J47	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J48	D,O	High Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J50	D,O	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse	High - Medium	Mod-Major Adverse
J51	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J51+	D,O	High - Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J52	D,O	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J53	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J53+	D,O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J55	D,O,F	Low	Moderate Adverse	Low	Moderate Adverse	Low	Moderate Adverse
J56	D	Medium	Moderate Adverse	Medium	Moderate Adverse	Medium	Moderate Adverse
J56+	D,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse

Property Receptor ID	**Nature Of View**	**Magnitude of Change** (Construction)	**Impact** (Construction)	**Magnitude of Change** (Year 1)	**Impact** (Year 1)	**Magnitude of Change** (Year 15)	**Impact** (Year 15)
J57	O	No Change	No Effect	No Change	No Effect	No Change	No Effect
J57+	D, S	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J59	O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J59+	O,S	Negligible	Minor Adverse	Negligible	Minor Adverse	Negligible	Minor Adverse
J60	O,F	Low – Negligible	Minor-Mod Adverse	Low-Negligible	Minor-Moderate Adverse	Low-Negligible	Minor-Moderate Adverse
J61	D	High – Medium	Mod-Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse
J62	D	High	Major Adverse	High-Medium	Moderate-Major Adverse	High-Medium	Moderate-Major Adverse

Appendix 13B Cumulative Assessment Table

13B Cumulative Assessment Table

As explained in section 13.2.6.11 of Chapter 13, cumulative impacts are considered where the presence of other developments of a similar type and scale within the study area may have an impact on the perception of the landscape character of that area, or on views from sensitive receptors. A number of cumulative developments of various types and scales have been included in this EIA for consideration in the assessment of cumulative effects, see chapter 19. The first step in the cumulative assessment is a filtering process to ascertain which of the identified cumulative developments have the potential to cause significant cumulative effects and the following table presents the findings of this filtering process. Those developments that have been considered as requiring further cumulative assessment are highlighted grey.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
Overhead Line Developments			
M/2011/0500/F	Tamnamore to Omagh 110kV network reinforcement project. This is a 50km 110kV overhead electricity line and substation between existing NIE substations at Tamnamore, Dungannon and Omagh.	A section of Tamnamore to Omagh line lies within the northern area of proposed NIE Interconnector 5km study area. Much of the Tamnamore to Omagh line is too distant from the NIE Interconnector to result in cumulative effects, however, a section of the Tamnamore to Omagh line is located approximately 1.6km from the proposed NIE Interconnector at its closest point.	Yes - This cumulative development is of a similar type, nature, scale and parts of it are situated close enough to the proposed NIE Interconnector to cause potentially significant cumulative effects to the landscape and visual resource.
N/A	No planning application has been formulated or submitted by EirGrid for the portion of the Tyrone-Cavan Interconnector within the Republic of Ireland and the form of their proposals is as yet undetermined.		NIE is unable to conduct a cumulative impact assessment as part of this ES.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
Wind developments			
M/2011/0652/F	Erection of 1 no. 50KW Wind Turbine with a hub height of 36.5m to supply farm business;	Turbine tip height – 45.5m Distance to NIE proposal - 4.3km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2008/0797/F	Erection of 1 no. wind turbine;	Distance to NIE proposal - 3.5km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2010/0412/F	Proposed installation of a GAIA (11KW) Wind turbine on a 18mt high lattice tower type mast;	Distance to NIE proposal - 3.7km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2010/0589/F	24.8m height 11kw white wind turbine with galvanised steel lattice tower for domestic use;	Turbine tip height – 24.8m Distance to NIE proposal - 2.6km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2011/0465/F	Erection of wind turbine (32.3m hub height 30m blades);	Turbine tip height – 47.3m Distance to NIE proposal - 0.3km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and nearby viewpoints 8 and 7 would be considered to have negligible cumulative magnitude.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
M/2010/0913/F	Erection of a Wind Turbine (50 Kw Max) With a Tower height of 30 Metres;	Turbine tip height – 39.5m Distance to NIE proposal - 4.9km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2009/0940/F	Proposed wind turbine 1 Gaia Wind 11kw turbine (18.3m lattice tower construction);	Distance to NIE proposal - 1km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and nearby viewpoints 8, 9 and 10 would not have a view of the proposed turbine.
M/2008/0464/F	Proposed 24m High (10KW) domestic wind turbine;	Distance to NIE proposal - 10.9km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and nearby viewpoints 9 and 10 would be considered to have negligible cumulative magnitude as the turbine is likely to be substantially screened by existing intervening vegetation on the distant horizon.
O/2011/0364/F	Proposed erection of Wind Turbine with 30m hub height and 30m rotor diameter with a maximum output not exceeding 250kW;	Turbine tip height - 45m Distance to NIE proposal - 2.9km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
O/2006/1142/F	Erection of 33M high wind turbine;	Distance to NIE proposal - 1.8km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and none of the identified viewpoints would have a view of this proposed turbine.
O/2010/0406/F	Installation of 50kw wind turbine on 36.6m high free standing steel mast;	Turbine tip height - 46m Distance to NIE proposal - 4.7km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
O/2010/0646/F	Proposed new 20kw wind turbine on 18m mast;	Distance to NIE proposal - 1.1km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector. Viewpoints 18 and 19 (that would have distant views of the proposed turbine) would be considered to have neglgible cumulative magnitude when this turbine is viewed in combination with the proposed NIE Interconnector.
O/2011/0195/F	Erection of a single 250kW wind turbine of 40m tower height (55M to tip) and control room;	Turbine tip height - 55m Distance to NIE proposal - 1.4km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and none of the identified viewpoints would have a view of this proposed turbine.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
O/2007/0796/F	Erection of 1 No. wind turbine 33m high with associated site works;	Distance to NIE proposal - 1.8km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and none of the identified viewpoints would have a view of this proposed turbine.
O/2007/0374/F	15m high 6kw proven wind turbine for domestic use at 90 Clay Road Keady;	Distance to NIE proposal - 5km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
O/2007/0449/F	Erection of a 15m High 6kw wind turbine for domestic and agricultural use at 44 Tievenamara Road;	Distance to NIE proposal - 5km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
10416 (Monaghan County Council Planning Reference)	Four wind turbines of hub height 85m & rotor diameter 100m, with an overall height not exceeding 135m, 1no. permanent anemometer mast 85m in height.	Turbine tip height - 135m Distance to NIE proposal - 6km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
Other Developments			
O/2010/0212/F	600mm dia radio transmission dish mounted on steel pole fixed to existing facade of building;	Distance to NIE proposal - 4.5km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
O/2011/0401/F	Proposed 2 No. Free Range Poultry Sheds with 4No. Feed Bins;	Max height – 5.4m Distance to NIE proposal - 0.6km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and none of the identified viewpoints would have a view of this proposed development.
O/2011/0539/F	Replacement Poultry Shed with 2 No. feed bins to contain 35000 egg laying hens in enriched cages;	Max height - 6m to roof pitch Distance to NIE proposal - 4.6km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
O/2011/0412/F	Proposed free range poultry shed generator store and feed bin (amended scheme to include 6 passing bays);	Max height – 4.25m Distance to NIE proposal - 2.9km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2012/0340/F	Proposed 2 no. Select Farm Poultry Sheds 4 no. feed bins and an ancillary building with biomass boiler standby generator office and changing facilities (each poultry shed will contain 25850 chickens;	Max height – 6.865m Distance to NIE proposal - 3.2km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
O/2012/0234/F	Erection of 1 no. Chicken House (22 600 birds - high welfare broilers);	Max height – 6.3m Distance to NIE proposal - 4.4km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
O/2003/0276/A4	Proposed new chicken house;	Max height TBC Distance to NIE proposal - 3.9km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
O/2010/0490/F	Proposed free range poultry shed generator store and feed bin;	Max height - 5m Distance to NIE proposal - 3.4km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.
M/2010/0717/F	Proposed 2No. Poultry Houses (Each Containing 23000 Chickens) 4 No. Feed Bins and a Office Changing & Generator Building;	Max height TBC Distance to NIE proposal - 0.1km	Yes - This cumulative development is situated close enough to the proposed NIE Interconnector to cause potential cumulative visual effects although cumulative landscape effects are not predicted due to limited influence on LCA's when considered in combination with the NIE Interconnector.
M/2010/0487/F	Proposed additional free range poultry shed and feed bin (to contain 6000 free range egg laying hens);	Max height TBC Distance to NIE proposal - 0.7km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and from nearby viewpoints 9 and 10 this development is likely to be screened by existing intervening vegetation on the distant horizon.

Planning Application No	Description	Elements of development relevant to LVIA (distances are approximate & to closest NIE tower)	Additional Cumulative Assessment Required
10480 (Monaghan County Council Planning Reference)	1) demolish existing farm buildings; (2) erect a poultry unit, manure store and egg store; (3) insert a holding tank and two number meal bins; and,	Max height – Approx 7.3m Distance to NIE proposal - 2.4km	No - significant cumulative effects are not likely for the following reasons - There would be limited influence on neighbouring LCA's in combination with proposed NIE Interconnector and from nearby viewpoint 30 this development is likely to be screened by existing vegetation and localised topography that intervenes.
11358 (Monaghan County Council Planning Reference)	To erect a second poultry rearing house.	Max height – 3.95m Distance to NIE proposal - 3.4km	No - significant cumulative effects are not likely due to distance from Proposed NIE Development; and limited influence on neighbouring LCA's in combination with proposed NIE Interconnector.

Appendix 14A Summary of Individual Land Parcel Impacts

14 AGRONOMY

14.1 INTRODUCTION

The Proposed Development is described in Chapter 5 (Proposed Development) of this ES. This technical report assesses the impacts on the Agronomy Environment. Agronomy is the science and economics of crop production and management of farm land. In this assessment the Agronomy Environment consists of agricultural, horticultural and commercial tree plantations along the Proposed Development, upon which the interconnector infrastructure (including the proposed substation at Turleenan) will be built. It consists of land registry parcels within a 60m corridor from the centreline of the proposed overhead line and land parcels adjoining the proposed substation (as shown in Figure 14.10).

14.2 METHODOLOGY

The assessment has been based on road side survey and examination of aerial mapping information, Land Registry boundary data, Ordnance Survey field mapping and Department of Agriculture and Rural Development Statistics.

The agronomy impact assessment methodology involves three steps;

1. A baseline assessment is carried out. The type and size of agricultural land parcels and the character of the Agronomy Environment is described in section 14.3. The character is described in terms of the *sensitivity* of the Agronomy Environment to the impacts of the Proposed Development. The methodology used to determine *sensitivity* is explained in section 14.2.1;
2. An assessment of predicted impacts during construction and operation phases is carried out. The predicted impacts are described in section 14.4. The *magnitude* of predicted impacts is described based on criteria as set out in section 14.2.2;
3. Referring to the *sensitivity* of the receiving environment and *magnitude* of impact, the *significance* of impact on affected land parcels is predicted based on the criteria as set out in section 14.2.3.

14.2.1 Baseline Assessment and Categorisation of the Agronomy Environment

The baseline existing agronomy environment is contained within the Land Registry boundaries which were identified within the study area. The character of the agronomy environment is categorised by assessing the *sensitivity* of each land parcel along the Proposed Development. The *sensitivity* is expressed as a value which has a range from low to very high (see table 14.1). The *sensitivity* values are specific to this assessment because these values relate to the sensitivity of the land parcel to the impacts of an electricity infrastructure development.

Sensitivity

In this assessment the main criteria in determining the *sensitivity* of a land parcel is the enterprise type. The criteria for categorisation of sensitivity are shown in Table 14.1.

Table 14.1 Criteria for Categorisation of Sensitivity

Sensitivity Category[1]	**Characteristics (mainly based on farm enterprise)**
Very High	Experimental Husbandry Farms, Stud Farms, Intensive Livestock enterprises (pigs and poultry), Commercial tree plantations, Horticultural enterprises such as Glass Houses, Polly Tunnels, Mushroom Farms, Orchards.
High	Dairy Farms. Vegetable cropping and high value crops such as Potatoes and other root crops.
Medium	Conventional Tillage farms, Beef farms, Sheep farms and non Intensive Equine Enterprises
Low	Rough Grazing, Bog and Commonage, Very Extensive livestock enterprises.

Site Specific Factors

In this assessment the main criteria for characterising the *sensitivity* of affected land parcels is the farm enterprise type as set out in table14.1 However, there may be *site specific factors* which have to be assessed on a case by case basis. Examples of such *site specific factors* are;

- Specialised husbandry practices may affect the sensitivity of a land parcel – e.g. height of apple trees dependant on cultivars grown and cropping density.
- The presence of specialised facilities on affected land parcels e.g. dog training tracks, horse race/training tracks, crops that require irrigation;
- The size and shape of the site of an intensive livestock enterprise or horticultural enterprise may dictate that future expansion may only occur on a specific part of the site and therefore the viability of the enterprise may be very sensitive to impacts which would restrict expansion;
- Where land parcels have livestock or crops which have a value or importance which is above the normal for this type of farm, the *sensitivity* value may be increased. Possible examples are experimental sites and rare breeds or varieties.

[1] *Sensitivity may vary from indicated values depending on intensity of enterprise*

14.2.2 Magnitude of impacts

There are no 400 kV circuits in Northern Ireland – there are two 400 kV circuits operating in the Republic of Ireland for over 30 years. There are 275 kV circuits in operation since 1969 in Northern Ireland and these are now, along with other parts of the electricity infrastructure, part of the existing farming environment.

The elements of the Proposed Development which will cause potential impacts on the Agronomy Environment are identified in section 14.5. The magnitude of the impact is the scale of impact due to the Proposed Development and is assigned values ranging from very low to very high. The probability and duration of the impact is also considered. The criteria and methodology for assessment of impact magnitude are set out in Table 14.2.

Table 14.2 Criteria and methodology for Assessment of Impact Magnitude

Magnitude	Determining Criteria
Very High	A Permanent restriction on the operation of a land parcel, for example as a result of a permanent change in land area due to construction of the substation or permanent change in the cropped area due to removal of trees under the overhead line. A permanent loss of approximately 15% or greater of the cropped area or the removal of substantial buildings from an intensive enterprise would result in a very high magnitude impact.
High	A Permanent restriction on the operation of a land parcel due to loss of approximately 10-15% of the cropped area. The removal of standard cattle or sheep buildings in a conventional farmyard or temporary impacts on specialised facilities such as a horse training track could result in a high magnitude impact. Construction phase impacts without mitigation could have a high magnitude of impact on intensive enterprises.
Medium	A Permanent restriction on the operation of a land parcel due to loss of approximately 5-10% of the cropped area. Possible medium magnitude impacts scenarios are where access to land or farmyard or development of farmyard is restricted by the location of the tower or overhead line but there is alternative access or land for expansion of the farmyard. Construction phase impacts without mitigation could have a medium magnitude of impact on conventional cattle and sheep farms.
Low	A Permanent restriction on the operation of a land parcel due to loss of approximately 1-5% of the cropped area. The enterprise experiences

Magnitude	Determining Criteria
	inconvenience as a result of a low magnitude impact. Construction phase impacts with mitigation, and the presence of the overhead line over grass or tillage fields, tend to have either low or very low magnitude of impact.
Very Low	A Permanent restriction on the operation of a land parcel due to loss of less 1% of the cropped area. None or very low impact from construction phase impacts or presence of the overhead lines.

The criteria in Table 14.2 are subject to a qualitative assessment of impact based on the author's judgement.

14.2.3 Significance of Impact

The significance of the impact is the importance of the outcome of the impact or the consequences of the change.

Table 14.3 Significance of Impact Criteria Used in this Assessment

Significance of impacts	Definition which applies in this assessment
Imperceptible Impact	An impact so small that it cannot be measured or if capable of measurement is without noticeable consequences.
Slight Adverse Impact	An impact which causes noticeable changes in the character and management of an enterprise in a minor or slight way. The enterprise experiences inconvenience as a result of the Proposed Development. Buildings and facilities would generally be left in place or can easily be replaced. Typically impacts would occur at the boundary of the land parcel.
Moderate Adverse Impact	An impact which alters the character of an enterprise in a manner that requires moderate changes in the management and operation of the enterprise. The enterprise can be continued as before but with increased management or operational difficulties - the enterprise mix and / or intensity of farming would be such that the farming system could continue perhaps with additional labour or contractor charges or other additional costs.
Major Adverse Impact	An impact which by its character, magnitude, duration or intensity alters a sensitive aspect of the enterprise. The enterprise cannot be continued without major changes in management and operation of the enterprise. Where the impact is Major Adverse an enterprise change could be necessitated e.g. from dairy to beef or the scale of the enterprise could be reduced. At the upper level of Major Adverse Impact the change may be such that it obliterates sensitive characteristics of the enterprise. This would generally mean that the enterprise cannot be continued as a result of the Proposed Development or a dramatic change is required

Significance of impacts	Definition which applies in this assessment
	in the future management and operation of the enterprise. This would occur where land take is of such a scale that the remaining land would not form a viable unit or make the holding unworkable or where important farm buildings, facilities or water sources were removed and could not be replaced or these facilities were rendered unusable as a result of the Proposed Development.

The *significance* of impact is determined by assessing the *magnitude* of the impact and the *sensitivity* of the affected land parcel. The matrix in Table 14.4 provides a guide for determining the level of significance of impact and is subject to variation on a case by case basis.

Table 14.4 Arriving at Impact Significance[2]

		Magnitude of Impact				
		Very Low	**Low**	**Medium**	**High**	**Very High**
Sensitivity	**Very Low**	Imperceptible	Imperceptible	Imperceptible (possible Slight Adverse)	Slight Adverse (possible Imperceptible)	Slight Adverse (possible Moderate Adverse)
	Low	Imperceptible	Imperceptible (possible Slight Adverse)	Slight Adverse (possible Imperceptible)	Moderate Adverse (Possible Slight Adverse)	Moderate Adverse (possible Major Adverse)
	Medium	Imperceptible	Slight Adverse (possible Imperceptible)	Moderate Adverse Or Slight Adverse)	Major Adverse (Possible Moderate Adverse)	Major Adverse
	High	Imperceptible (possible Slight Adverse)	Moderate Averse (Possible Slight Adverse)	Moderate Adverse (Possible Major Adverse)	Major Adverse	Major Adverse
	Very High	Slight Adverse (possible Imperceptible)	Moderate Adverse (Possible Slight Adverse)	Major Adverse (Possible Moderate Adverse)	Major Adverse	Major Adverse

From table 14.4 it can be seen that a Medium magnitude impact on a Medium sensitivity farm will tend to result in a Slight Adverse significance. The table illustrates that an impact which affects a farm with a low *sensitivity* value will not be as *significant* as a similar impact which affects a farm with a high *sensitivity* value. A temporary impact which occurs during construction will generally be less significant than a permanent or residual impact.

14.2.4 Impact Criteria Examined in this Assessment

The impact on each land parcel is assessed by looking at a combination of criteria. The enterprise type gives an indication of the sensitivity (see table 14.1) of that land parcel to

[2] *Table 1.4 is a guide broadly based on DMRB Vol 2, part 5, table 2.4 "Arriving at the Significance Effect Categories". Site specific factors and case by case assessment by agronomist may result in assessment of significance which varies from the values in this table.*

change caused by impacts from the Proposed Development and the type of disturbance that may occur. The area of land under the towers and the area of damage caused to land along access tracks, at working sites, at guarding and stringing sites and along under-grounding trenches are calculated and expressed as percentages of the affected land parcels to indicate the magnitude of the impact (with reference to table 14.2). The quality of the land is also taken into account. Certain activities are curtailed due to the presence of the overhead line (see section 14.5.3). The inconvenience caused by the location of the overhead line is assessed. The distance of the farm yard and the location of the overhead line relative to the farm yard are examined to determine whether expansion of the farmyard could be impacted due to the presence of the overhead line.

14.2.5 Consultation

The author has consulted with NIE's Landowner Liaison Officers and the Department of Agriculture & Rural Development (DARD). DARD confirmed that land under the towers is eligible for Single Payment and that if hedges are removed with planning permission there will be no penalties under the Cross Compliance rules.

14.2.6 Data Deficiencies / Difficulties with Producing the Impact Assessment

No land owner interviews were carried out by the agronomist and therefore the baseline environment is described based on visual assessment from road sides, the use of aerial photography and the use of land registry boundaries to describe the size of land parcels along the Proposed Development. It is normal practice to conduct as many land owner interviews as possible in agronomy impact assessments for linear infrastructural projects such as road projects. These interviews provide information on the existing farming environment and are necessary to assess the requirement for mitigation measures such as under and over bridges to accommodate livestock movements. For example the mitigation required for a dairy farmer severed by a new road may be different than that required by a beef or sheep farmer and therefore, in road infrastructure projects it is necessary to know exact details about the farm enterprise. However in the case of electricity projects the requirement for mitigation measures is more limited because the impacts are lower. The bulk of mitigation measures are required during the construction phase and are mainly contractor work practices rather than constructed mitigation. Therefore visual assessment in this project is adequate to describe the existing environment in a manner that allows the agronomist to determine appropriate mitigation.

14.3 EXISTING ENVIRONMENT

The study area consists of land parcels along the Proposed Development as shown in figure 14.10. The Proposed Development will start at Turleenan, Moy, Co Tyrone and end at the border with Republic of Ireland at Doohat or Crossreagh, Co Armagh - a distance of 33.9 kilometres. The Overhead Line will also oversail a farm in Crossbane, Co Armagh for a short

distance. It crosses through county Armagh for approximately 24 kilometres (70% of total length) and through county Tyrone for approximately 10 kilometres (30% of total length).

14.3.1 Review of National Statistics for Counties Armagh and Tyrone

The farm sizes and enterprise types along the Proposed Development can be determined from data in the Agricultural Census of Northern Ireland (June 2012) for Counties Armagh and Tyrone and confirmed by visual assessment in table 14.5. The Agricultural Census of Northern Ireland categorises land use into ten main agricultural categories (page 11 of the 2012 publication): *Cereals, General Cropping, Horticulture, Specialist Pigs, Specialist Poultry, Dairy, Grazing Livestock (Least Favoured Areas), Grazing Livestock (Lowland), Mixed, Other Types*. Although classified as non agricultural and not included in the Agricultural Statistics, commercial forestry and tree plantations are included as a separate group in this agronomy assessment. Generally, the sensitivity of commercial forests is very High because the trees will probably be removed under the over head lines. The type of farm enterprises along the Proposed Development is shown in column 3 of table 14.5 and the observed farm enterprises and land use is shown in column 5

Table 14.5 Enterprise type and land use along the proposed Overhead Line.

Enterprise Type	Typical Sensitivity	Combined Statistics for the 2 counties (70% Armagh 30% Tyrone)	Northern Ireland (% of farms)	Land parcels observed along Proposed Development [3] (% of farms)
Grassland - Cattle & Sheep	Medium	78	77.5	82.5
Grassland – Dairy	High	9.5	11	7
Cereals & other combinable crops	Medium	2.0	2.5	5
Mixed (crops and livestock)	Medium	2	2.5	2.75
Other (including equine, pigs & poultry & horticulture)	High	8.5	6.5	1.75
Commercial Forestry & Tree Plantations	High or Very High	-	-	1
Average farm size (Ha)	-	31	40	-[4]

[3] *Based on the land registry boundary data, examination of aerial photography and visual assessment*
[4] *The average size of the affected land parcels is approximately 10 hectares. The average farm size is expected to be the same as the combined county averages from DARD statistics – approximately 31hectares (70% Armagh/30%Tyrone).*

The average land area per farm in Northern Ireland is 40.6 hectares (table 4.2 DARD 2012 statistics). In county Tyrone the average land area per farm is also 40 hectares whereas the average land area per farm for County Armagh is 27 hectares. The farms along the Proposed Development have an average land area of 31 hectares (assuming 70% in Co Armagh and 30% in Co Tyrone). There are a higher proportion of horticultural enterprises and other enterprises such as intensive/specialist equine enterprises in Co Armagh (table 4.3 page 38 of 2012 Agricultural Statistics Report).

Tuberculosis (TB) and Brucellosis are the most prominent notifiable animal diseases. DARD statistics[5] show that 5.5% herds in Co Armagh and 4.8% of herds in Co Tyrone are likely to test positive for Tuberculosis (TB) in a 12 month period. The average incidence for TB along the Proposed Development is similar to the average for Northern Ireland (5.8%). The incidence of Brucellosis along the Proposed Development is higher than the average for Northern Ireland – 0.9% expected incidence in Armagh/Dungannon region versus 0.5% average for Northern Ireland.

Based on table 7.5 of DARD 2012 statistics, the tillage cropping in Co Armagh consists of cereals - 3% of total area; horticultural - 2% of total area and potatoes - 0.1% of total area. The tillage cropping in Co Tyrone consists of cereals - 1% of total area; horticultural - 0.05% of total area and potatoes - 1% of total area. Based on the visual assessment along the proposed line, approximately 8% of land parcels have tillage crops. Soil borne plant diseases can be spread where soil is moved on the surface of construction machines. Potato wart disease is not present in Northern Ireland. DARD keep records of sites where potato cyst nematode has been recorded in seed potato crops – this disease does not occur along the Proposed Development. Notifiable soil borne crop diseases are generally not associated with cereals and maize crops. Orchards are present on two land parcels (Land Parcel Ref Nos 021 & 040 [as shown on Figure 14.10]). A horse training track is located on one land parcel (Ref No 091). A willow plantation is grown on one land parcel (Ref Nos 100) as a bio remediation system for an industrial facility and a non commercial tree plantation is grown one land parcel (Ref No 106). A forestry plot is located in land parcel Ref No 1028. There are approximately 12 dairy farms (Ref No 007, 030, 038, 047, 053, 083, 084, 089, 092, 113, 118 and 135).

[5] Both TB and Brucellosis incidence figures are based on the DARD statistics for the 5 year period up to December 2012

14.3.2 Soils Along the Proposed Development

The dominant soil type within the study area is a good quality clay[6] soil which is well suited to grass but generally not suited to tillage crops due to restricted drainage. There are pockets of free draining acid brown earths (often with tillage crops) which occur less frequently. The land in the southern part of the Proposed Development (between towers 75 – 102) is classified as Less Favoured or Disadvantaged by DARD and the area has a slightly higher annual rainfall. The land here is often elevated, wet and consisting of rushy grassland.

14.3.3 Categorisation of Land Parcels

The results of the categorisation of land parcels along the Proposed Development are shown in column 4 of Annex 14.1 of this report. These land parcels are categorised based on the criteria described in section 14.2.1. The sensitivity of land parcels along the Proposed Development is as follows;

- 2% is categorised as having Very High sensitivity – 4 land parcels; There is one orchard (Ref No 040), one equine enterprise (Ref No 091), one bio remedial willow plantation (Ref No 100) and one commercial forestry land parcel (Ref No 1028). These land parcels consist of 49 hectares of land – 3% of the study area;
- 7% is categorised as having High sensitivity – 13 land parcels. There is one orchard (Ref No 021). There are 12 dairy farms. The area of these 13 land parcels is 225 hectares – 13% of the study area.
- 91% are categorised as having Medium sensitivity. These are mainly grass land parcels with grazing livestock and tillage or mixed grassland and tillage. These land parcels consists of 1,493 hectares of land – 84% of the study area.

14.4 DESCRIPTION OF THE PROPOSED DEVELOPMENT

A detailed description of the Proposed Development is provided in Chapter 5 of this ES. The Proposed Development will consist of;

- A 22.2 hectare substation with access road and two 275 kV termination towers located at Turleenan, Moy, Co Tyrone;
- Overhead line infrastructure consisting of lines (conductors) running for 33.9km between Turleenan, Moy, Co Tyrone and Doohat or Crossreagh, Co Armagh. The lines will be suspended by 102 towers – there will be approximately 3 towers per kilometre length of the

[6] *Sources for soil type information are;*
"Soils of Northern Ireland and their Environmental Significance", Crawford Jordon (Agrifood and Biosciences Institute) and Barry Rawlins (British Geological Survey);
European Soils Database V2;
DARD Agricultural Statistics 2012 (Disadvantaged Areas Map).
Visual Survey carried out by author.

overhead line. The minimum height of the overhead lines will be 9.0m metres above field level. The 400kV tower heights will range from 25 metres to 41 metres.

NIE policy (Number 06/025) provides vertical standoff distances according to the type of the overhead line. The Policy states the minimum height of the overhead lines will be 7.6m above field level. However, the Proposed Development has been designed with a minimum clearance of 9.0m – i.e. the overhead lines will be at a greater minimum height from the ground. The clearance distance will vary depending on the distance from the tower (the mid-point between tower will generally be the lowest point of the overhead line but it will be no less than 9.0m).

The exact layout and size of the tower bases will vary from site to site from a maximum size of 400m^2 to a minimum size of 90m^2. The towers will be constructed from within a working area of approximately 1225 m^2 around each tower. The towers will be strung using specialized stringing equipment. This equipment will be sited approximately 100 metres from the angle towers. The area of land disturbance on the 61 stringing locations will be approximately 400m^2 per site. There will be 64 guarding locations where either scaffolding or temporary wooden pole sets with cross bars will be erected to suspend the conductors as they are strung across public roads and wide watercourses. In this assessment the area of disturbance at these guarding locations is assumed to be 8m wide. There are 17 locations where existing overhead lines will have to be diverted under ground due to the proposed 400 kV line crossing over them. This will involve digging a 1m deep and 0.5m wide open trench in the fields at these locations to bury the existing lines. The width of disturbance along these trenches will be 5m wide and the lengths vary from site to site. Access tracks will be required to provide access to the tower sites, stringing locations and guarding locations. These tracks will consist of existing farm roads and new temporary tracks across fields. In this assessment it is assumed there will be a low level of short-to-medium term damage (2 - 15 years) to soil structure in the areas under the construction sites, stringing locations, guarding locations and along the temporary access tracks and under-grounding trenches.

The land requirement for the Proposed Development can be summarized as follows;

- The construction of the substation plus two 275 kV towers and access road will require 22.2 hectares of agricultural land;
- The construction of one hundred and one 400 kV towers will require approximately 3.6 hectares of land (one 400 kV tower will be located within the substation site). The land beneath the towers can be utilized for grazing on most grass farms and on tillage farms it will be waste ground. (In this assessment the permanent land loss area is the area of the base of each tower plus a 2m buffer strip to allow for additional wastage);

- Approximately 12.5 hectares around the towers will be utilized as working sites around the towers. This land will only be required during the construction phase and can be reseeded and cropped as per the remainder of the farm after the construction period;
- Approximately 2.4 hectares will be utilised as stringing locations. This land will only be required during the construction phase. Disturbance should be minimal at these sites and if necessary these sites can be reseeded and cropped as per the remainder of the farm after the construction period;
- Approximately 8.4 hectares of green field will be utilised as new access tracks. These temporary access tracks will only be required during the construction phase and can be reseeded and cropped as per the remainder of the farm after the construction period.
- Approximately 1.6 hectares of green field will be utilised as temporary guarding locations (allowing each site will be approximately 8m wide). This land will only be required during the construction phase. Disturbance should be minimal at these sites and if necessary these sites can be reseeded and cropped as per the remainder of the farm after the construction period;
- Approximately 1.6 hectares will be disturbed when trenches are excavated to bury existing overhead lines. These sites can be reseeded and cropped as per the remainder of the farm after the trenches are back filled.

14.5 IMPACT ASSESSMENT

14.5.1 'Do Nothing' Scenario

In the case of the "Do Nothing Scenario" there would be no negative impacts on the Agronomy Environment and there would be no change to the existing Agronomy environment.

14.5.2 Construction Phase Impacts – before mitigation

One hundred and eighty one land parcels (consisting of 1,767 hectares) are within the Agronomy Study Area for the Proposed Development. The construction of the substation, two 275 kV towers and access road in Turleenan will require 22.2 hectares of land taken from two land parcels (Ref Nos 001 and 1036). A non agricultural dwelling and yard will also be demolished. The substation site will be enclosed within the proposed perimeter fence. The construction of two terminal towers within the substation site will require the existing 275 kV NIE Overhead Line to be diverted temporarily. This will cause an impact on two land parcels adjoining the proposed substation site (Ref Nos 1082 and 1083).

One hundred and seventy eight land parcels (consisting of 1,733 hectares) will be located within the 60m corridor or have temporary access tracks (Ref Nos 1036, 1082 and 1083 will not be

located within the 60m corridor but are affected by the substation construction). The proposed overhead line will oversail 138 land parcels and one hundred and two towers will be constructed on 79 land parcels. The remaining 43 land parcels will be affected by other elements of the proposed infrastructure such as temporary access routes, guarding locations, stringing locations, under-grounding trenches and proximity to proposed overhead lines. Land access for construction will be achieved through the way-leaves procedures and in consultation with landowners. During the construction phase hedgerows and field boundaries will be either permanently or temporarily removed. Preconstruction monitoring will be carried out prior to construction. This will involve site investigation works which may require pit excavation and ground water monitoring. The construction phase of the entire development is scheduled for a 36 month period. However the construction phase on any one farm will rarely exceed 6 months and during this time the construction activity on the farm will generally not exceed 4 weeks for each tower constructed. Following construction of towers the stringing operation will typically be completed within 14 - 21 days. The proposed construction methodology for towers and overhead lines is provided in section 5.6 of the ES. Table 14.6 summarises the construction phases and the potential impacts.

Table 14.6 Summary of Potential Impacts, Duration of Impacts and Predicted Magnitude of Impacts during the Construction Phases (before mitigation).

Phase of Construction	Expected Duration	Potential impacts and Predicted Magnitude of Impact (before mitigation).
Preconstruction Monitoring	4 working days	• Increased risk of spread of animal and crop diseases due to machinery entering and exiting farm land – the predicted magnitude of impact from this activity is very low where walk over surveys are required and low to medium where ground investigations are required; • Wheel rutting and compaction along access routes to monitoring sites. In the worst case scenario (assuming poor weather conditions), the magnitude of this impact is predicted to be in the low to medium range – depending on length of access route(s) required and number of sites.
Construction of Access Routes to Tower Sites	1-3 working days per access routes estimated	• Increased risk of spread of diseases due to machinery entering and exiting farm land. The magnitude of impact is predicted to be low • Wheel rutting and compaction along access routes. In the worst case scenario (assuming poor weather conditions), the magnitude of this impact is predicted to be in the low to medium range – depending on

Phase of Construction	Expected Duration	Potential impacts and Predicted Magnitude of Impact (before mitigation).
		length of access route(s) required and number of towers; • Spillages of fuel oil from machinery which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence; • Disturbance impacts on crops and livestock along the access route and increased risk of animals escaping from the farm/field. As well as the land lost to cropping and grassland access roads may cause temporary fragmentation of farm. The magnitude of this impact is predicted to be in the low to medium range depending on the length of access route(s) required and number of towers; • Tree felling is predicted to have a very high magnitude of impact on one willow plantation (Ref No 100).

Phase of Construction	Expected Duration	Potential impacts and Predicted Magnitude of Impact (before mitigation).
Installation of Tower Foundations	3-6 working days per tower	• Increased risk of spread of diseases due to machinery entering and exiting farm land. The magnitude of impact is predicted to be low. • Removal of external farm boundaries is predicted to have a high magnitude impact because of potential impact on spread of disease between farms, safety of livestock and loss of shelter on several land parcels; • Wheel rutting and compaction along access routes. In the worst case scenario (assuming poor weather conditions), the magnitude of this impact is predicted to be in the low to medium range; • Disturbance impacts on crops and livestock along the access route and at the site of construction and increased risk of animals escaping from the farm/field. The magnitude of this impact is predicted to be in the low to medium range depending on length of access track(s) and the number of towers required; • Land drains may be disturbed during excavation. The magnitude of this impact is predicted to be low; • Spillages of fuel oil may occur from machinery which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence; • Spillages of concrete may occur which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence.
Erection of Towers	10 working days per tower	• Increased risk of spread of diseases due to machinery entering and exiting farm land is predicted to result in a low magnitude of impact depending on resulting disturbance; • Removal of external farm boundaries is predicted to have a high magnitude impact because of potential impact on spread of disease between farms, safety of livestock and loss of shelter on several land parcels; • Wheel rutting and compaction along access routes. In the worst case scenario (assuming poor weather

Phase of Construction	Expected Duration	Potential impacts and Predicted Magnitude of Impact (before mitigation).
		conditions), the magnitude of this impact is predicted to be in the low to medium range – depending on length of access track(s) and number of towers; • Disturbance impacts on crops and livestock along the access route and at the site of construction and increased risk of animals escaping from the farm/field. The magnitude of this impact is predicted to be in the low to medium range depending on length of access track(s) and number of towers; • Spillages of fuel oil may occur from machinery which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence.
Stringing of Overhead Lines	14-21 working days per straight line	• Increased risk of spread of diseases due to machinery entering and exiting farm land. The magnitude is assessed to be low magnitude • Wheel rutting and compaction along access routes. In the worst case scenario (assuming poor weather conditions), the magnitude of this impact is predicted to be in the low to medium range; • Land drains may be disturbed during the under-grounding of existing overhead lines. The magnitude of this impact is predicted to be low; • Disturbance impacts on crops and livestock along the access route and at the site of construction and increased risk of animals escaping from the farm/field. The magnitude of this impact is predicted to be in the low to medium range; • Spillages of fuel oil may occur from machinery which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence.
Re Instatement Works	1 – 5 working days	• Increased risk of spread of diseases due to machinery entering and exiting farm land. The magnitude is assessed to be in the low to medium range of magnitude depending on resulting disturbance; • Wheel rutting and compaction along access routes. In the worst case scenario (assuming poor weather

Phase of Construction	Expected Duration	Potential impacts and Predicted Magnitude of Impact (before mitigation).
		conditions), the magnitude of this impact is predicted to be in the low to medium range • Land drains may be disturbed during excavations resulting in low magnitude impact • Disturbance impacts on crops and livestock along the access route and at the site of construction and increased risk of animals escaping from the farm/field. The magnitude of this impact is predicted to be in the low to medium range; • Spillages of fuel oil may occur from machinery which could contaminate soil and surface water. The magnitude of this impact is predicted to be very low due to low probability of occurrence.

The Sensitivity of the agronomy environment along the Proposed Development is Medium (section 14.3.3). The pre mitigation Magnitude of impact during the construction phase is predicted to be High. The Significance of construction phase impact on the agronomy environment along the Proposed Development is predicted to be Moderately Adverse - without mitigation. The High pre mitigation impact is based on;

- Approximately 6.2% of herds along the Proposed Development will be restricted due to Tuberculosis (TB) and Brucellosis. Therefore without mitigation there is a low probability of increasing the spread of these notifiable diseases. Where a TB or Brucellosis outbreaks occur, typically a farmer may be restricted from selling animals to marts and other farms for a period of 6 - 12 months. There are compensation payments available from the DARD to mitigate losses for farmers affected by these diseases. The risk of spreading other enzootic diseases increases where farm boundary fences are not maintained and where there is inter farm traffic, particularly where this traffic comes into direct contact with animals and faeces;
- Without mitigation there is a high probability that short - medium term damage (2–15 years) will be caused to soil structure on very small areas of affected land parcels. This will occur on approximately 26.5 hectares of land;
- Without mitigation the impact on field drainage will be restricted to very small areas;
- Without proper on-site management of fuel tankers there may be spills of fuel oil;
- Without mitigation there is a high probability of disturbance to cropping and livestock. Without proper management of access gates and farm boundaries livestock will stray;

- Dust impacts will not be significant;
- Noise from construction machinery will cause temporary and transient impacts on livestock which generally are not significant. Where pile driving occurs there is the potential to cause a very high impact if livestock take flight.

14.5.3 Operational Phase Impacts – before mitigation

The substation should have no direct interaction with agriculture. However without the mitigation of a secure boundary fence the construction activity could have a high impact on grazing animals in adjoining fields. Noise levels from the substation site (section 11.4.3.1 of ES) will not be significant for grazing livestock accustomed to noises around farm yards and beside public roads.

Without mitigation the operation of the overhead line transmission system will have the following potential impacts during the operational phase;

1. Visual impacts

   Livestock and crops are not sensitive to visual impacts. Very high sensitivity farms such as nationally important stud farms may perceive the towers and overhead lines as a blemish which will affect the perception of their farm;

2. Noise Impacts.

   Noise will emanate from 5 general sources during the operational phase;

   i. Corona Discharge Noise

      The Corona Discharge noise consists of a random buzzing sound and hum noise. The noise from this source may exceed 10 decibels above background levels for very short durations causing minimal effects (section 11.4.3.2 of the ES);

   ii. Turbulent wind noise

      The amount of turbulent wind noise is linked to wind speed. The noise emanating from the towers and overhead lines would be perceived as the existing environment by livestock;

iii. Operational noise

This noise will be created on a constant basis due to the high voltage of current in the 400 kV lines. The range quoted in Chapter 11 of the ES is 40 – 45 decibels and will vary with weather conditions. This noise varies depending on conditions and is relatively constant. This will become a background noise in the vicinity of the overhead lines;

iv. Maintenance works noise.

Emergency patrol crews may have to access land. The machinery employed will range from walking in by foot, quads, 4 x 4 jeeps. These will not cause significant noise impacts;

The line will be inspected by helicopter on an annual basis. This will potentially cause flight and fright impacts to sensitive animals such as thorough bred horses and to lesser extent cattle (e.g. calves reared/grazed on their own);

3. Direct impacts

i. Farm machinery operations will have to avoid towers. In tillage fields this will result in uncropped areas under the towers and increased traffic around towers (similar to headland traffic in a tillage field). In grassland fields the areas under the towers may be grazed but it will not be possible to spray or reseed these areas. Silage will not be harvested from the area directly under the tower and there will be small areas around the tower where silage may not be harvested;

ii. The area under the towers may act as reservoir for noxious weeds species. Typical examples wild oats and cleavers in tillage fields and chickweed, docks and thistles in grassland fields;

iii. There will be an impact on soil structure due to the construction activities. This damage is assumed to occur at tower construction sites (0.1225ha), at stringing locations (0.04ha), at guarding locations and along temporary access tracks and under-grounding trenches. This type of damage can be rectified by cultivation and re seeding. Where construction machinery causes compaction and poaching time is required for root growth, earth worm activity and natural soil weathering and cracking to help the soil structure to recover;

iv. Towers will be subject to regular inspections (every 2 years), may require maintenance every 18-20 years and may require refurbishment every 40-60 years. These infrequent activities can potentially cause disturbance.

v. Locating towers within intensive livestock (pigs/poultry) and intensive horticultural (e.g. glass houses/poly-tunnels) sites may cause very high impacts due to the loss of buildings or loss of land adjacent to buildings;

vi. Parts of tree plantations (e.g. willow plantations) will be cleared to allow access and construct towers. A minimum clearance of 3.1m is required for trees under the overhead lines (table 3 of NIE Policy Document 6/025 - Clearance to Overhead Lines);

vii. Participation in DARD funded schemes such as the Countryside Management Scheme can be potentially affected when trees or farm habitats are removed or damaged.

4. Restrictions on rural development

   NIE Policy document 6/025 specifies minimum clearance distances for buildings in proximity to 400 kV overhead lines. If buildings are constructed under the overhead lines abiding by these recommended clearances will restrict building height.

5. Health and Safety Risks

   Farm machines can reach maximum heights of 7.5 metres in the case of a tipping trailer. In some incidents teleporters and other specialised equipment may be capable of reaching higher heights. Rain guns and high trajectory slurry spreaders can spread a column of water up to 70 metres. The minimum clearance for the overhead lines will be 9.0 metres. In general most farm machinery can operate safely under these overhead lines (e.g. fertilising, spraying, crop harvesting, slurry applications using low trajectory application methods). However caution needs to be exercised when working with high loads (e.g. bales stacked on a trailer), tipping trailers, irrigating crops, folding spray booms, spreading slurry using high trajectory application methods and using machinery with high/elevated attachments. In the case of trees in an orchard a minimum clearance of 5.3m is recommended in table 3 of NIE Policy Document 6/025 (Clearance to Overhead Lines). Therefore the presence of these overhead lines is an potential hazard on farms and will be inconvenient in certain circumstances;

6. EMF

   The issue of Electro Magnetic Fields is dealt with in chapter 7 of the ES. There are no significant impacts from EMF.

Table 14.7 Summary of Potential Impacts, Duration of Impact and Predicted Magnitude of Impact during the Operational Phase (before mitigation).

Impact	Duration of Impact	Predicted Magnitude of Impact (before mitigation).
1.Visual	> 60 years	• The visual impact does not have any known significant impacts on the performance of livestock or crops and therefore is assessed as imperceptible.
2. Noise	> 60 years	• For nearly all livestock general operational noises from the substation and overhead lines will have an imperceptible impact. Constant background noises do not cause animals to take flight and at the predicted noise levels stress will not be caused. Grazing livestock are rotated around the farm and therefore are not exposed to these noises constantly. With mitigation as prescribed in section 14.6.1 general maintenance works will not cause significant noise effects and will in any event occur very infrequently. Helicopter inspections can spook animals but this will not result in significant impact. Given the predicted low impact from Helicopter noise the overall magnitude of impact from all noise is assessed to be very low.

Impact	Duration of Impact	Predicted Magnitude of Impact (before mitigation).
3. Direct Impacts	7 to > 60 years	• Rutting can be repaired by ploughing, tilling and re seeding. In other situations minor rutting can be repaired by chain harrowing or light discing followed by rolling or just allowing the top soil to repair itself. Compaction due to heavy machinery can cause medium term (7 - 15 years) damage. This can be repaired by sub soil ripping and in the long term crop rooting and biological activity in soils will elevate this impact. The damage will be related to ground conditions and weather during construction. This assessment assumes that this damage will occur on green field sites at all construction sites, access roads, guarding locations and under-grounding locations. This impact is predicted on 26.2 hectares of land which is 1.5% of the area of land parcels along the Proposed Development. Therefore the impact magnitude from soil damage is low; • Direct impacts due to noxious weeds, reduced cropping areas and disturbance during maintenance works will have impacts on affected land parcels. These impacts will occur at the sites of the towers which account for <1% of the land area of land parcels along the Proposed Development. Hedgerows will have to be trimmed under the overhead lines to maintain a minimum clearance of 3.1m. • Management of commercial orchards will have to be altered to maintain a clearance of 5.3m between trees and overhead lines. Parts of willow plantations will have to be cleared to enable construction and maintenance of towers and the height of the trees under the overhead lines will have to be maintained at 3.1m below the overhead lines. These impacts represent medium to very high impacts on these land parcels.
4. Restriction on development	> 60 years	• The majority of the proposed overhead lines are located in green field sites where agricultural buildings will not be built or where there are adequate alternative sites. Therefore the impact magnitude from restriction on development is very low.
5. Health and Safety	> 60 years	• In general the Agriculture sector has a very high risk profile. Electrocution represents 3% – 4% of all farm fatalities and contact with overhead lines is responsible for over half of these deaths (Table 8 of “Fatal Injuries in Farming, Forestry, Horticulture and Associated Industries 2010 / 2011, HSE” for England/Wales/Scotland and Figure 2 of Farm Safety Action Plan 2009-2012 HSA Ireland). The risk of contact with the proposed overhead lines is reduced, compared with existing low voltage

Impact	Duration of Impact	Predicted Magnitude of Impact (before mitigation).
		lines, because the proposed lines will be at least 9.0 metres above field level. Taking into account the potential severity of impact, the impact magnitude from health and safety impacts is low.
6. EMF	> 60 years	• EMF does not have any known significant impact on the performance of livestock or crops and therefore is assessed as an imperceptible impact on farms.

The operational phase impacts on individual land parcels are presented in Annex 14.1. The Sensitivity of the agronomy environment along the Proposed Development is Medium (section 14.3.3). The pre mitigation Magnitude of impact during the operational phase is predicted to be in the Very Low – Low range. The Significance of operational phase impact on the agronomy environment along the Proposed Development is predicted to be Slight Adverse - without mitigation. The Very Low – Low range pre mitigation impact is based on;

- Total permanent land loss will be 25.8 hectares (22.2 hectares for the substation and 3.6 hectares for the towers). This represents 1.5% of the affected area which is a low impact.
- After the construction period the probability of spreading diseases is negligible;
- Medium term damage will be caused to soil structure during the construction phase on very small areas of affected land parcels. The effects of these will fade in the medium term (7-15 years) and will be negligible in the longer term (>15 years). Also the area upon which this impact occurs (approximately 26.5 hectares) is taken into account. Therefore the magnitude of impact due to this damage is very low in the operation phase;
- There will be permanent disturbance to cropping and livestock due to the towers being physical obstacles to farm machinery operations. This impact will occur every 340 metres approximately (see Chapter 5) and therefore the magnitude of impact is very low in the operation phase.
- Noise and visual impacts from operation of the Proposed Development will not be significant.
- Health and Safety impacts for farms located within the study area represent a very low impact.

14.6 MITIGATION MEASURES

14.6.1 General Construction Phase Mitigation Measures

1. The site of the proposed substation will be fenced off prior to construction to ensure that the construction activities within the site have no impact on adjoining farm land. Work procedures outlined in ES Chapter 5 will ensure that there are no adverse impacts on air quality, water quality or ambient noise from the construction of the substation;
2. Prior to commencement of work the contractor(s) will prepare method statements and work programmes that show more detailed phasing of work;
3. An access officer will be appointed by the contractor to liaise with the landowners along the line route and ensure that their requirements for entry are met so far as is possible;
4. NIE will employ a team to monitor the construction phase of the project and ensure works are being carried out in accordance with the agreed method statement (to be written within the framework of mitigation measures presented in the ES), safety procedures, pollution control etc. All NIE employees and contractors involved in the construction phase will get adequate training – in particular in relation to their responsibilities in relation to accessing farms;
5. NIE will insure that land owners have reasonable access to all parts of their farm during the construction phase to minimise or eliminate temporary farm fragmentation impacts. If existing access roads are affected or fenced off then NIE will make all reasonable efforts to provide alternative access;
6. Notify farmers at least 1 week in advance of any works commencing on their farms. The contractor will make all reasonable efforts to accommodate the farmers grazing and cropping programmes and re schedule works if practical to do so;
7. Disease protocols will be adhered to and NIE will comply with any DARD regulation pertaining to animal or plant diseases. In practice this obligation will be fulfilled by;
    - Contact the local Forest Service, District Veterinary Offices, DARD Quality Assurance branch and DARD potato inspectors and notify them of proposed commencement date and location of works. These consultations will allow precautions to be taken to avoid spreading animal and crop diseases;
    - Work crews and vehicles will avoid farm yards and areas on farms where there are accumulations of animal manure or where slurry or other animal manure has been land spread. If contact has been made with animal manure foot wear and vehicle tyres will be disinfected in situ using approved disinfectants listed on DARD Website. If the DARD Quality Assurance branch identifies fields where crop diseases such as Potato Cyst Nematode are located, construction equipment will be cleaned in situ to prevent soil

transportation and disposal of surplus soil will be agreed in advance with the DARD inspectors;

- Adequate pre entry to land training of all staff and contractors entering lands to construct the Proposed Development. This training would enable operators to be aware of the potential risks, avoid risks and carry out preventative measures;
- Before surveying commences meet land owners and complete a pre survey interview. This interview asks the land owner to notify NIE of any animal diseases and other risks which may arise from dangerous livestock (e.g. bulls);
- NIE will insure that disinfection facilities are available to all work crews if required;
- Only personnel with clean foot wear and machines with clean wheels will be allowed entry on to farms;

8. Appropriate fencing will be erected to exclude livestock from sites of construction and to keep livestock within farm boundaries;
9. In most situations mitigation measures for noise will not be required during construction phase. This is because livestock will quickly adapt to changes in their noise environment. If pile driving is required owners of livestock in adjoining fields will be notified in advance. This will allow land owners with sensitive livestock (e.g. blood stock) to take precautions such as moving these animals away from the pile driving site to a quieter part of the farm or to house them;
10. It will be policy to minimize non tracked vehicular access to site in wet weather;
11. Vehicles which leak oil or fuel will not be allowed on farms. Any soil contaminated by fuel spillage will be removed to an approved waste facility;
12. Land drains which may be potentially affected during tower foundation excavations and excavations for under-grounding will be re directed and or re connected in a manner that maintains existing land drainage. Before surveying commences the pre survey interview with land owners will identify location of drains;
13. Aggregate will be imported rather than quarried on site;
14. Where top soil is stripped it will be back filled on to the same surface. All disturbed field surfaces will be re-instated. These works may be carried out by the land owner, the contractor or an agreed third party;
15. Concrete will be mixed off–site and imported to the site. The pouring of concrete for tower bases will take place within a designated area using a geosynthetic material to prevent concrete runoff into the surrounding soil. Any soil contaminated by concrete spillage will be removed to an approved waste facility;

16. If water is being pumped from a construction site a water filtration system will be utilized to minimize impacts on water sources.

14.6.2 Mitigation Measures – Operational Phase

1. Maintain stock proof boundary around the substation;
2. Adherence to minimum overhead line clearances and avoiding farm yards will minimise safety risks;
3. NIE will employ a team to monitor the operation phase of the project and ensure that safety procedures are adhered to;
4. Disease protocols as specified in section 14.6.1 will be adhered to during maintenance works;
5. NIE will provide safety information directly to all affected land owners.
6. NIE will have responsibility to insure that all materials used in the construction are safe and are to a minimum specification – in terms of safety and quality. A safety audit will be carried out along the network prior to full operation;
7. Other injurious and disturbance impacts which cannot be mitigated directly by NIE will be addressed in the statutory compensation process;

14.7 CONSTRUCTION PHASE IMPACTS AFTER MITIGATION MEASURES ARE CONSIDERED

After considering the range of potential impacts, their duration, the probability of these impacts and mitigation measures the overall *significance* of construction phase impacts on the agronomy environment along the Proposed Development is *Imperceptible*. This arises mainly from impacts caused to farm enterprises from disturbance during construction – these impacts are short term. The impacts on individual farms are provided in Annex 14.1 and summarised in table 14.8.

Table 14.8 Summary of individual land parcel construction phase impacts after mitigation

Significance Category	Construction Phase Impacts	
	Number of land parcels	% of total
Imperceptible	108	60
Slight Adverse	65	36
Moderate Adverse	6	3
Major Adverse	2	1

There is a major adverse Construction Impact (after mitigation) on two land parcels. One land parcel (Ref No 001) is directly affected by the construction of the substation. There is also a Major Adverse construction impact on a very highly sensitive willow plantation (Ref No 100) due to having to clear 0.1225 hectares of plantation around one tower and due to having to harvest the willow crop on the remainder of the land parcel prematurely to allow for construction of the overhead line. There are Moderate adverse impacts on six land parcels - Reference numbers 010, 039, 045, 091, 1036 and 1083. Land parcels 010, 039 and 1083 are beef and sheep farms with a Moderate impact due to disturbance to the farm enterprise. Land parcel No. 045 is a beef farm upon which 6 towers will be constructed causing a Moderate impact. Land parcel No 091 is classified as very high sensitivity due to the equine enterprise and the moderate impact is due to the temporary disturbance of the training track. Ref No. 1036 is a Beef and Sheep enterprise and will lose 8% of the area of the land parcel to the construction of the substation in Turleenan resulting in a Moderate impact.

14.8 RESIDUAL OPERATIONAL IMPACTS AFTER MITIGATION MEASURES ARE CONSIDERED

14.8.1 Residual Impacts on Agriculture on a National and Regional level

The land area required to construct the substation is 22.2 hectares and the area of land beneath the towers is approximately 3.6 hectares. The total permanent land take is approximately 25.8 hectares which is a tiny fraction of the area of agricultural land in counties Armagh and Tyrone (326,417 hectares) and is 1.5% of the area of land parcels along the Proposed Development (1,767 hectares). Therefore the *Significance* of impact on a regional or national level will be *Imperceptible*.

14.8.2 Residual Impacts on Agriculture along the Proposed Development

Approximately 25.8 hectares of agricultural land will be required for the construction of the Proposed Development. There will be medium term impacts on a further 26.5 hectares around the towers, stringing locations, guarding locations and along access tracks and under-grounding trenches. This combined area is 3.0% of the total area of agricultural land in land parcels along the Proposed Development. The permanent disturbance caused by the towers and overhead lines is very low. The *significance* of residual operational impact, after mitigation, on the agronomy environment along the Proposed Development is assessed to be *Imperceptible,* that is to say an impact that will not cause a noticeable change in the agronomy environment along the proposed development.

14.8.3 Residual Impacts on Individual Land Parcels

The farm impacts in the operational phase are due to land area reductions (substation and tower sites), short-to-medium term damage caused to land during the construction phase, long term inconvenience caused by presence of the overhead lines and towers and potential restrictions caused to farm yard expansion. The *magnitude* and *significance* of the impact on each land parcel is shown in Annex 14.1 and summarised in table 14.9

Table 14.9 Summary of individual land parcel Residual Impacts

Significance Category	Operational Phase (Residual) Impacts	
	Number of land parcels	% of total
Imperceptible	140	77.5
Slight Adverse	35	19
Moderate Adverse	5	3
Major Adverse	1	0.5

There is a major adverse residual Impact (after mitigation) on one land parcel (Ref No 001) which is directly affected by the construction of the substation. This land parcel will lose 21 hectares (54% of the area of the land parcel). There are Moderate residual impacts on five land parcels – Reference numbers 005, 040, 068, 100 and 1036. The Moderate impact on land parcel 5 is due to a high proportion of this very small land parcel being oversailed by the overhead line. Land parcel No. 40 is an orchard and the overhead line will oversail it causing a Moderate impact on the operation of the orchard and management of trees. The Moderate impact on Beef and Sheep land parcel No. 068 is caused by the close proximity of the overhead line to the farm yard. There is a Moderate Adverse residual impact on the willow plantation (Ref No 100) due to a Low magnitude impact during the operational phase from the disturbance of insuring the crop is cut at least every 2 years in order to maintain adequate clearance. The normal harvesting interval for willow is every 3 years but it is normal to harvest bio remedial willow crops every two years where fertilising nutrients are added. This assessment assumes that the crop will reach 5-6 metres in two years and can be safely harvested. The Moderate impact on Beef and Sheep land parcel Ref No. 1036 is due to loosing 8% of the land parcel to the construction of the substation in Turleenan.

14.9 CUMULATIVE IMPACTS

14.9.1 Other Overhead Powerlines

Cumulative impacts of other proposed overhead powerline developments have been considered. The Tamnamore to Omagh proposed overhead powerline will be located approximately 1.6km north east of tower 10. It does not impact on any of the land parcels affected by the Tyrone to Cavan development and therefore there is no cumulative impact.

14.9.2 Planned Agricultural Development

The author is aware of planned large scale agricultural buildings (poultry houses) along the Proposed Development in land parcels Ref No 045, 090, 100 and 1085 (near towers 22, 66 and 72). The planned poultry development in land parcel 045 (M/2008/0143/F) would be located under the overhead lines and on the site of tower No 22. The planned poultry development in land parcel 090 (O/2009/0807/F) would be located under the overhead lines. In land parcel 100 the overhead line would overhang the eastern corner of the 12,500m^2 site of the planned poultry development (O/2009/0805/F) for approximately 30m (150m^2). As this is a corner in the site and the overhead line is located in an adjoining land parcel the overhead line will not overhang the proposed house. The boundary of the planned poultry development in land parcel 1085 (O/2009/0804/F) is located 15m West of the nearest conductor – in an adjoining land parcel. Therefore if planned poultry developments in land parcels 100 and 1085 are built the Proposed Overhead Line Development will have Imperceptible impacts on these planned developments. If the planned chicken houses on land parcels Ref No 045, and 090 are built

before the Proposed Development and if the location of the towers or the lack of minimum clearance between houses and overhead line (as per NIE policy document 6/025) resulted in the demolition of a chicken house the impact magnitude would be Very High resulting in a residual impact of Major Adverse significance. If the houses can be safely built and operated without interfering with the proposed tower locations and if the minimum clearance is provided the impact magnitude would be High resulting in a residual impact of Moderate significance. (This arises from the inconvenience and safety risks associated with overhead lines located over farm yards). Therefore this assessment assumes that this sensible approach will be adopted and the cumulative impacts on land parcels 045 and 090 are also Imperceptible.

Annex 14.1 – Summary of Individual Land Parcel Impacts.

Farm ID (** - Note 4)	**Land area (ha)**	**Farm Enterprise**	**Sensiti-vity**	**Number of Towers**	**Stringing locations (Yes/No)**	**Construction Phase Impact Assessment**				**Operational Phase Assessment**			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
001	39.3	Grassland (Cattle or sheep) (farm yard located 270m North West of nearest conductor and 160m to the boundary of proposed substation)	Medium	4 (two 275 kV towers and one 400 kV tower (T1) will be built within the site boundary of the substation – T2 will be located on the land parcel)	Y (one stringing location will be located within the site boundary of the substation)	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very High impact due to loss of 54 % of land parcel during construction and disturbance due to 3 stringing locations & guarding location; 0.158 hectares of access track[5] over green field; 1 tower site.	Major Adverse	Note 2	[21 ha of land will be fenced off permanently during construction. Of the retained lands 0.4 ha will be disturbed during the construction which is 2 % of land parcel] [0.057 ha of land under tower which is 0.3% of retained land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 270 metres from yard and 160 metres from the boundary of the substation.]	Very High	Major adverse
002	26	Grassland (Cattle or sheep) (farm yard located 90m South West of nearest conductor)	Medium	2 (T3 & T4)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.6 % of land parcel due to 1 stringing location & 1 guarding location & a under-grounding trench and 0.247 hectares of access track[5] (of which 0.195 hectares of access track is existing) and 2 tower sites	Slight adverse	Note 2	[0.407 ha of land disturbed during construction which is 1.6 % of land parcel] [0.078 ha of land under tower(s) which is 0.3 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 90 metres from yard]	Very Low	Imperceptible
003	15.9	Grassland (Cattle or sheep) (farm yard located 140m North East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact (due to under-grounding trench)	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 140 metres from yard]	Very Low	Imperceptible
004	5	Grassland (Cattle or sheep)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 1 stringing location and 0.026 hectares of access track	Imperceptible	Note 2	[0.066 ha of land disturbed during construction which is 1.3 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
005	0.2	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact. Existing access track used.	Imperceptible	Note 2	[Medium potential for permanent disturbance due presence of overhead line]	Medium	Moderate adverse
006	7.3	Grassland (Cattle or sheep)	Medium	2 (T5 & T6)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 5 % of land parcel due to 1 stringing location and 0.117 hectares of access track[5] (of which 0.003 hectares of access track is existing) and 2 tower sites	Slight adverse	Note 2	[0.372 ha of land disturbed during construction which is 5 % of land parcel] [0.071 ha of land under tower(s) which is 0.97 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Medium	Slight adverse
007	39.8	Grassland (Dairy) (nearest farm yard located 60m South of nearest conductor)	High	2 (T7 & T11)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1 % of land parcel due to 1 stringing location and 0.153 hectares of access track (of which 0.049 hectares of access track is existing) and 2 tower sites and 2 guarding locations	Slight adverse	Note 2	[0.425 ha of land disturbed during construction which is 1 % of land parcel] [0.05 ha of land under tower(s) which is 0.13 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 60 metres from yard]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
009	24.8	Grassland (Cattle or sheep) (farm yard located 110m South East of nearest conductor)	Medium	1 (T8)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 2 stringing locations and 0.227 hectares of access track[5] (of which 0.101 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.329 ha of land disturbed during construction which is 1.3 % of land parcel] [0.055 ha of land under tower(s) which is 0.22 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 110 metres from yard]	Low	Imperceptible
010	1.2	Grassland (Cattle or sheep)	Medium	1 (T9 – part of)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	High impact from general disturbance to the farming operation. Construction traffic on 15.8 % of land parcel due to 0.056 hectares of access track (of which 0.004 hectares of access track is existing) and 1 tower site and part of 1 guarding location	Moderate adverse	Note 2	[0.189 ha of land disturbed during construction which is 15.8 % of land parcel] [0.016 ha of land under tower(s) which is 1.33 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Medium	Slight adverse
011	2.1	Grassland (Cattle or sheep) (farm yard located 80m South East of nearest conductor)	Medium	1 (T9 – part of)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.3 % of land parcel due to 0.033 hectares of access track (all of which is existing) and 1 tower site and part of 1 guarding location	Slight adverse	Note 2	[0.133 ha of land disturbed during construction which is 6.3 % of land parcel] [0.016 ha of land under tower(s) which is 0.76 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Medium	Slight adverse
012	12.4	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact (1 guarding location)	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.17 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
013	17.4	Grassland (Cattle or sheep) (farm yard located 300m North West of nearest conductor)	Medium	1 (T10)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1.2 % of land parcel due to 0.072 hectares of access track and 1 tower site and 1 guarding location	Imperceptible	Note 2	[0.216 ha of land disturbed during construction which is 1.4 % of land parcel] [0.048 ha of land under tower(s) which is 0.28 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 300 metres from yard]	Very Low	Imperceptible
015	14.9	Grassland (Cattle or sheep) (farm yard located 280m North West of nearest conductor)	Medium	1 (T12)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1.1 % of land parcel due to 0.145 hectares of access track (of which 0.109 hectares of access track is existing) and 1 tower site	Imperceptible	Note 2	[0.159 ha of land disturbed during construction which is 1.1 % of land parcel] [0.028 ha of land under tower(s) which is 0.19 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
016	12.6	Grassland (Cattle or sheep)	Medium	1 (T13)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.7 % of land parcel due to 2 stringing locations and 0.141 hectares of access track[5] over green field and 1 tower site	Slight adverse	Note 2	[0.344 ha of land disturbed during construction which is 2.7 % of land parcel] [0.048 ha of land under tower(s) which is 0.38 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
017	4.9	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Medium potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
018	7.6	Grassland (Cattle or sheep) (farm yard located 230m West of nearest conductor)	Medium	1 (T14)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.6 % of land parcel due to 0.075 hectares of access track[5] (of which 0.002 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.196 ha of land disturbed during construction which is 2.6 % of land parcel] [0.049 ha of land under tower(s) which is 0.64 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 230 metres from yard]	Low	Imperceptible
019	4.4	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.8 % of land parcel at 2 guarding locations	Imperceptible	Note 2	[0.035 ha of land disturbed during construction which is 0.8 % of land parcel] [Medium potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
020	4.1	Grassland (Cattle or sheep)	Medium	1 (T15)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.7 % of land parcel due to 0.031 hectares of access track (of which 0.003 hectares of access track is existing) and 1 tower site	Imperceptible	Note 2	[0.151 ha of land disturbed during construction which is 3.7 % of land parcel] [0.023 ha of land under tower which is 0.6 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
021	8.2	Other (Cattle or sheep & horticulture – orchard) (farm yard located 60m North East of nearest conductor)	High (But only grass part of farm affected)	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low construction phase impact due to disturbance to the farming enterprise and construction traffic on 0.8% of land parcel due to 1 underground trench and 0.08 hectares of access track (of which 0.063 hectares of access track is existing)	Slight adverse	Note 2	[0.63 ha of land disturbed during construction which is 0.8 % of land parcel] [High potential impact on orchard mitigated by impact at edge of farm] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 60 metres from yard]	Low	Imperceptible
022	1.8	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line which only affects the grass part of the farm (medium sensitivity)]	Low	Slight adverse
022A	4.1	Grassland (Cattle or sheep)	Medium	1 (T16)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.6 % of land parcel due to 1 under ground trench and 0.09 hectares of access track and 1 tower site	Slight Adverse	Note 2	[0.282 ha of land disturbed during construction which is 6.6 % of land parcel] [0.028 ha of land under tower(s) which is 0.68 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
023	18.6	Grassland (Cattle or sheep) & Poultry (farm yard located 170m South West of nearest conductor)	Medium	1 (T17)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.7 % of land parcel due to 2 stringing locations and 0.163 hectares of access track[5] (of which 0.042 hectares of access track is existing) and 1 tower site	Slight Adverse	Note 2	[0.324 ha of land disturbed during construction which is 1.7 % of land parcel] [0.049 ha of land under tower(s) which is 0.26 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 170 metres from yard]	Low	Imperceptible
024	7.2	Grassland (Cattle or sheep) (farm yard located 150m South East of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 0.3 % of land parcel due to 1 guarding location	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.3 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 150 metres from yard]	Very Low	Imperceptible
025	16.1	Grassland (Cattle or sheep) (farm yard located 280m North West of nearest conductor)	Medium	2 (T18 & T19)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.2 % of land parcel due to 2 stringing locations and 0.177 hectares of access track[5] over green field and 2 tower sites and 1 guarding location	Imperceptible	Note 2	[0.523 ha of land disturbed during construction which is 3.2 % of land parcel] [0.08 ha of land under tower(s) which is 0.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Low	Imperceptible
**25A	8.4	Grassland (Cattle or sheep) (farm yard located 270m South East of nearest conductor)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 270 metres from yard]	Very Low	Imperceptible
**026	3.6	Grassland (Cattle or sheep) (farm yard located 280m South West of nearest conductor)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Very Low	Imperceptible
027	6.9	Grassland (Cattle or sheep) (farm yard located 260m East of nearest conductor)	Medium	0	N	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to [Very low potential impact due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 260 metres from yard]	Very Low	Imperceptible
028	9.2	Grassland (Cattle or sheep) (farm yard located 280m North East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
029	8.8	Grassland (Cattle or sheep) (2.1 ha woodland around yard) (nearest farm yard located 80m North East of nearest conductor)	Medium	1 (T20)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.4 % of land parcel due to 0.09 hectares of access track[5] (of which 0.004 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.207 ha of land disturbed during construction which is 2.4 % of land parcel] [0.031 ha of land under tower which is 0.35 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 100 metres from yard]	Low	Imperceptible
030	14.7	Grassland (Dairy) (farm yard located 120m South West of nearest conductor)	High	1 (part of T23)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.4 % of land parcel due to 1 tower site	Imperceptible	Note 2	[0.061 ha of land disturbed during construction which is 0.4 % of land parcel] [0.032 ha of land under tower(s) which is 0.22 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 120 metres from yard]	Very Low	Imperceptible
035	10.6	Grassland (Cattle or sheep) (farm yard located 50m North West of nearest conductor)	Medium	2 (part of T24 & T25)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.4 % of land parcel due to 0.192 hectares of access track (of which 0.058 hectares of access track is existing) and 2 tower sites and 1 guarding location	Slight adverse	Note 2	[0.359 ha of land disturbed during construction which is 3.4 % of land parcel] [0.047 ha of land under tower(s) which is 0.44 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Slight adverse
036	4.2	Tillage	Medium	0	N	Imperceptible construction phase impact	Note 1	Very low construction phase impact (1 guarding location)	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
037	5.9	Grassland (Cattle or sheep)	Medium	1 (T26)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 4.3 % of land parcel due to 2 stringing locations and 0.05 hectares of access track[5] over green field and 1 tower site	Slight adverse	Note 2	[0.253 ha of land disturbed during construction which is 4.3 % of land parcel] [0.052 ha of land under tower(s) which is 0.88 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
038	23.6	Grassland (Dairy) (farm yard located 180m South West of nearest conductor)	High	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 180 metres from yard]	Very Low	Imperceptible
039	9.3	Grassland (Cattle or sheep) (farm yard located 50m North East of nearest conductor)	Medium	2 (T27 & T28)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 5.2 % of land parcel due to 2 stringing locations and 0.197 hectares of access track[5] (of which 0.042 hectares of access track is existing) and 2 tower sites	Moderate adverse	Note 2	[0.48 ha of land disturbed during construction which is 5.2 % of land parcel] [0.08 ha of land under tower(s) which is 0.86 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
040	17.5	Horticulture (Orchard) (farm yard located 430m South East of nearest conductor)	Very High	0	N	Imperceptible construction phase impact	Note 1	Very Low construction phase impact during stringing	Slight adverse	Note 2 Maintain 5.3m clearance above orchard trees	[Medium potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 430 metres from yard] [Management practices will require trees to be maintained at approximately <4m and spray deflectors to be used to direct spray to under 4 m]	Medium	Moderate adverse
041	7.7	Grassland (Cattle or sheep) (farm yard located 250m South East of nearest conductor)	Medium	1 (T29)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2 % of land parcel due to 0.009 hectares of access track and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.155 ha of land disturbed during construction which is 2.6 % of land parcel] [0.054 ha of land under tower(s) which is 0.7 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 250 metres from yard]	Very Low	Imperceptible
042	2.1	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
043	21.2	Grassland (Cattle or sheep) (farm yard located 50m North West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.9 % of land parcel due to 0.02 hectares of access track and 1 guarding location and an under-grounding trench	Imperceptible	Note 2	[0.197 ha of land disturbed during construction which is 0.9 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Imperceptible
044	7.5	Tillage (farm yard located 90m West of nearest conductor)	Medium	1 (T30)	N	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.5 % of land parcel due to 0.089 hectares of access track (of which 0.02 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.192 ha of land disturbed during construction which is 2.5 % of land parcel] [0.031 ha of land under tower(s) which is 0.4 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 90 metres from yard]	Low	Imperceptible
045	42.8	Grassland (Cattle or sheep) & tillage (nearest farm yard located 80m West of nearest conductor) Planned poultry development located at site of tower No 22 and under conductors	Medium	6 (T21, T22, part T23, part T24, T31 & T32)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	High impact from general disturbance to the farming operation. Construction traffic on 2.9 % of land parcel due to due to 2 stringing site(s) & 3 guarding locations & 1 under-grounding site(s) 0.532 hectares of access track[5] (of which 0.069 hectares of access track is existing) and 6 tower sites	Moderate adverse	Note 2	[1.22 ha of land disturbed during construction which is 2.9 % of land parcel] [0.122 ha of land under tower(s) which is 0.29 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
047	16.5	Grassland (Dairy) (farm yard located 140m East of nearest conductor)	High	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.4 % of land parcel due to 0.145 hectares of access track (of which 0.1 hectares of access track is existing) and 1 guarding location	Imperceptible	Note 2	[0.07 ha of land disturbed during construction which is 0.4 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 140 metres from yard]	Very Low	Imperceptible
048	3.9	Grassland (Cattle or sheep) (farm yard located 280m South West of nearest conductor)	Medium	1 (part of T33)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3 % of land parcel due to 1 stringing location and 0.016 hectares of access track[5] over green field and 1 tower site	Imperceptible	Note 2	[0.177 ha of land disturbed during construction which is 3 % of land parcel] [0.023 ha of land under tower(s) which is 0.59 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Low	Imperceptible
050	5	Grassland (Cattle or sheep) (farm yard located 100m South East of nearest conductor)	Medium	1 (T34)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.7 % of land parcel due to 0.044 hectares of access track[5] and 1 tower site and under-grounding trenches	Slight adverse	Note 2	[0.333 ha of land disturbed during construction which is 6.7 % of land parcel] [0.046 ha of land under tower(s) which is 0.92 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 100 metres from yard]	Low	Slight Adverse
051	12.6	Tillage & Grassland (Cattle or sheep) (farm yard located 320m South West of nearest conductor)	Medium	1 (part of T33)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.5 % of land parcel due to due to 1 stringing site & 1 under-grounding site and 0.161 hectares of access track over green field and one tower site	Slight adverse	Note 2	[0.319 ha of land disturbed during construction which is 2.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 320 metres from yard]	Low	Imperceptible
053	9.3	Grassland (Dairy) (farm yard located 120m North East of nearest conductor)	High	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.5 % of land parcel due to 0.214 hectares of access track[5] over green field and 1 guarding location and under-grounding trenches	Slight adverse	Note 2	[0.33 ha of land disturbed during construction which is 3.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 120 metres from yard]	Very Low	Imperceptible
055	101.9	Grassland (Cattle or sheep) & tillage (nearest farm building located 100m East of nearest conductor)	Medium	5 (T35, T36, T37, T38, T39)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.1 % of land parcel due to 4 stringing locations & guarding location(s) and 0.477 hectares of access track[5] (of which 0.114 hectares of access track is existing) and 5 tower site(s) and 1 guarding location	Slight adverse	Note 2	[1.155 ha of land disturbed during construction which is 1.1 % of land parcel] [0.182 ha of land under tower(s) which is 0.18 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 100 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
056	18.2	Tillage & pigs/poultry (farm yard located 190m South East of nearest conductor)	Medium	1 (T40)	N	High potential impact from general disturbance to the farming operation due to potential spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.2 % of land parcel due to 0.142 hectares of access track (of which 0.04 ha is existing track) and 1 tower site	Imperceptible	Note 2	[0.226 ha of land disturbed during construction which is 1.2 % of land parcel] [0.028 ha of land under tower which is 0.15 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 190 metres from yard]	Low	Imperceptible
058	7.4	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.3 % of land parcel due to 1 guarding location.	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.3 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
059	8.8	Grassland (Cattle or sheep) (farm yard located 90m East of nearest conductor)	Medium	2 (T41 & T42)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 4.9 % of land parcel due to 2 stringing locations and 0.11 hectares of access track[5] over green field and 2 tower sites	Slight adverse	Note 2	[0.435 ha of land disturbed during construction which is 4.9 % of land parcel] [0.073 ha of land under tower(s) which is 0.83 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 90 metres from yard]	Low	Slight adverse
060	27.1	Grassland (Cattle or sheep) & pigs/poultry (farm yard located 200m West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.4 % of land parcel due to 0.247 hectares of access track (of which 0.176 ha is existing) and an under-grounding trench	Imperceptible	Note 2	[0.103 ha of land disturbed during construction which is 0.4 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 200 metres from yard]	Very Low	Imperceptible
061	5.7	Grassland (Cattle or sheep)	Medium	1 (T43)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4.3 % of land parcel due to 0.086 hectares of access track[5] (of which 0.028 ha is existing) and 1 tower site and an under-grounding trench	Imperceptible	Note 2	[0.246 ha of land disturbed during construction which is 4.3 % of land parcel] [0.032 ha of land under tower(s) which is 0.56 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
062	26.1	Grassland (Cattle or sheep) (farm yard located 210m West of nearest conductor)	Medium	2 (T44 & T45)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.9 % of land parcel due to 0.097 hectares of access track[5] (of which 0.03 ha is existing) and 2 tower sites and 1 guarding location and under-grounding trench	Slight adverse	Note 2	[0.498 ha of land disturbed during construction which is 1.9 % of land parcel] [0.061 ha of land under tower(s) which is 0.23 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 210 metres from yard]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
063	6.8	Grassland (Cattle or sheep) (farm yard located 90m East of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.3 % of land parcel due to 1 guarding location	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.3 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 90 metres from yard]	Low	Slight adverse
064	1.9	Grassland (Cattle or sheep) (farm yard located 100m East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 100 metres from yard]	Low	Imperceptible
065	17.8	Grassland (Cattle or sheep) (farm yard located 180m West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 180 metres from yard]	Very Low	Imperceptible
066	6.2	Tillage	Medium	1 (T46)	Y	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 3.9 % of land parcel due to 2 stringing locations and 0.042 hectares of access track[5] over green field and 1 tower site	Slight adverse	Note 2	[0.245 ha of land disturbed during construction which is 3.9 % of land parcel] [0.043 ha of land under tower(s) which is 0.7 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
067	5.2	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
068	4.6	Grassland (Cattle or sheep) (nearest farm yard located 40m East of nearest conductor)	Medium	1 (T47)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.9 % of land parcel due to 0.037 hectares of access track[5] over green field and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.181 ha of land disturbed during construction which is 3.9 % of land parcel] [0.022 ha of land under tower(s) which is 0.48 % of land parcel] [High potential impact on yard due to location of overhead line over yard]	High	Moderate adverse
069	4.4	Grassland (Cattle or sheep) (farm yard located 140m East of nearest conductor)	Medium	1 (part of T48)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.2 % of land parcel due to 0.059 hectares of access track and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.141 ha of land disturbed during construction which is 3.2 % of land parcel] [0.012 ha of land under tower(s) which is 0.27 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 140 metres from yard]	Low	Imperceptible
070	24.8	Grassland (Cattle or sheep) (nearest farm yard located 60m South West of nearest conductor)	Medium	2 (part ofT48 & T49)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.1 % of land parcel due to 0.285 hectares of access track[5] (of which 0.055 hectares is existing) and 2 tower sites and 2 stringing sites	Imperceptible	Note 2	[0.52 ha of land disturbed during construction which is 2.1 % of land parcel] [0.056 ha of land under tower(s) which is 0.23 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impacts on farm yards located at 60m and 110m South West of nearest conductor]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
072	16.6	Grassland (Cattle or sheep) (farm yard located 290m South East of nearest conductor)	Medium	1 (T50)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.2 % of land parcel due to 0.078 hectares of access track over green field and 1 tower site	Slight adverse	Note 2	[0.201 ha of land disturbed during construction which is 1.2 % of land parcel] [0.032 ha of land under tower(s) which is 0.19 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 290 metres from yard]	Low	Imperceptible
073	11.9	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
074	16.4	Grassland (Cattle or sheep) (farm yard located 200m South East of nearest conductor)	Medium	1 (T51)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 0.073 hectares of access track and 1 tower site and 1 guarding location	Imperceptible	Note 2	[0.217 ha of land disturbed during construction which is 1.3 % of land parcel] [0.031 ha of land under tower(s) which is 0.19 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 200 metres from yard]	Low	Imperceptible
075	6.2	Tillage	Medium	1 (T52)	Y	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.5 % of land parcel due to 1 stringing locations & guarding location(s) and 0.033 hectares of access track[5] over green field and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.234 ha of land disturbed during construction which is 3.8 % of land parcel] [0.097 ha of land under tower(s) which is 1.56 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
076	12.5	Grassland (Cattle or sheep) (farm yard located 50m South West of nearest conductor)	Medium	1 (T53)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 0.109 hectares of access track (of which 0.073 hectares of access track is existing) and 1 tower site	Imperceptible	Note 2	[0.159 ha of land disturbed during construction which is 1.3 % of land parcel] [0.06 ha of land under tower(s) which is 0.9 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Imperceptible
077	7.6	Grassland (Cattle or sheep)	Medium	1 (T54)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.3 % of land parcel due to 0.035 hectares of access track[5] (of which 0.002 hectares of access track is existing) and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.179 ha of land disturbed during construction which is 3 % of land parcel] [0.022 ha of land under tower(s) which is 0.29 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
078A	5.7	Grassland (Cattle or sheep)	Medium	1 (T55)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.1 % of land parcel due to 2 stringing locations & 1 guarding location & an under-grounding trench and 0.052 hectares of access track over green field and 1 tower site	Slight adverse	Note 2	[0.351 ha of land disturbed during construction which is 6.1 % of land parcel] [0.044 ha of land under tower(s) which is 0.77 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
078B	2.2	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from disturbance on 1% of the land parcel due to 1 guarding location	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 1 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
079	25.5	Grassland (Cattle or sheep) & tillage (farm yard located 260m North East of nearest conductor)	Medium	1 (T56)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.7 % of land parcel due to 0.049 hectares of access track[5] over green field and 1 tower site and an under-grounding trench	Imperceptible	Note 2	[0.172 ha of land disturbed during construction which is 0.7 % of land parcel] [0.044 ha of land under tower(s) which is 0.28 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 260 metres from yard]	Very Low	Imperceptible
080	20.3	Grassland (Cattle or sheep) (farm yard located 190m East of nearest conductor)	Medium	2 (T57 & T58)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.3 % of land parcel due to 1 stringing location and 0.254 hectares of access track[5] (of which 0.067 hectares of access track is existing) and 2 tower sites and one stringing site	Slight adverse	Note 2	[0.472 ha of land disturbed during construction which is 2.3 % of land parcel] [0.071 ha of land under tower(s) which is 0.35 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]] [Very Low potential impact on farm yard due to location of overhead line 190 metres from yard]	Low	Slight adverse
**80A	4.6	Grassland (Cattle or sheep) plus pigs/poultry (farm yard located 170m East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact due to access track.	Imperceptible	Note 2	[Very Low potential impact on farm yard due to location of overhead line 170 metres from yard]	Very Low	Imperceptible
081	4.9	Grassland (Cattle or sheep)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.8 % of land parcel due to 1 stringing location and 0.046 hectares of access track over green field	Slight adverse	Note 2	[0.086 ha of land disturbed during construction which is 1.8 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
082	0.4	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
083	18.7	Grassland (Dairy)	High	2 (T59 & T60)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.1 % of land parcel due to 0.152 hectares of access track (of which 0.003 hectares is existing track) and 2 tower sites	Slight adverse	Note 2	[0.394 ha of land disturbed during construction which is 2.1 % of land parcel] [0.048 ha of land under tower(s) which is 0.26 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
084	12.7	Grassland (Dairy) (farm yard located 280m South East of nearest conductor)	High	1 (T61)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.4 % of land parcel due to 0.202 hectares of access track[5] (of which 0.069 hectares of access track is existing) and 1 tower site and an under-grounding trench	Slight adverse	Note 2	[0.304 ha of land disturbed during construction which is 2.4 % of land parcel] [0.0 ha of land under tower(s) which is 0.19 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Low	Slight adverse
087	10.2	Grassland (Cattle or sheep) (farm yard located 170m South East of nearest conductor)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.4 % of land parcel due to 1 stringing location and 0.227 hectares of access track (of which 0.127 hectares of access track is existing)	Slight adverse	Note 2	[0.14 ha of land disturbed during construction which is 1.4 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 170 metres from yard]	Low	Imperceptible
088	36.8	Grassland (Cattle or sheep) (nearest farm yard located 120m North West of nearest conductor)	Medium	3 (T62, T63 & T64)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 1 stringing location and 0.21 hectares of access track[5] (of which 0.126 hectares of access track is existing) and 3 tower sites	Slight adverse	Note 2	[0.49 ha of land disturbed during construction which is 1.3 % of land parcel] [0.091 ha of land under tower(s) which is 0.25 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 210 metres from yard]	Low	Slight adverse
089	12.4	Grassland (Dairy)	High	1 (T65)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.5 % of land parcel due to 0.131 hectares of access track[5] (of which 0.069 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.185 ha of land disturbed during construction which is 1.5 % of land parcel] [0.028 ha of land under tower(s) which is 0.23 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
090	10.9	Tillage (farm yard located 50m South East of nearest conductor) Planned Poultry Development located on the land parcel under proposed conductor	Medium	1 (T66)	N	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.7 % of land parcel due to 0.035 hectares of access track (of which 0.004 hectares of access track is existing) and 1 tower site and 2 guarding locations and an under-grounding trench	Slight adverse Maintain 5.3m clearance above planned buildings	Note 2	[0.29 ha of land disturbed during construction which is 2.7 % of land parcel] [0.028 ha of land under tower(s) which is 0.262 % of land parcel] [Medium potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Slight adverse
091	16.8	Grassland (sheep & horses) (farm yard located 110m South East of nearest conductor)	Very High	1 (T67)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease. High potential impact on training track.	Note 1	Medium impact from short term disturbance to horse training track - low general disturbance to the farming operation. Construction traffic on 1.2 % of land parcel due to 0.148 hectares of access track (of which 0.064 hectares of access track is existing) and 1 tower site	Moderate adverse	Note 2 Minimise disturbance to track surface. Re instate surface of track.	[0.207 ha of land disturbed during construction which is 1.2 % of land parcel] [0.025 ha of land under tower(s) which is 0.15 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 110 metres from yard]	Very Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
092	9.5	Grassland (Dairy)	High	1 (part of T68)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 1 stringing location and 0.189 hectares of access track[5] (of which 0.136 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.123 ha of land disturbed during construction which is 1.3 % of land parcel] [0.018 ha of land under tower(s) which is 0.19 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
093	2.7	Tillage	Medium	1 (part of T68)	Y	Low potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.9 % of land parcel due to 1 stringing location and 0.051 hectares of access track[5] over green field and 1 tower site	Slight adverse	Note 2	[0.186 ha of land disturbed during construction which is 6.9 % of land parcel] [0.027 ha of land under tower(s) which is 1 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
094	2.4	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.9 % of land parcel due to 0.0201 hectares of guarding site	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.4 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
095	14.5	Grassland (Cattle or sheep) (farm yard located 200m South East of nearest conductor)	Medium	1 (T69)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 0.046 hectares of access track[5] over green field and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.122 ha of land disturbed during construction which is 1.3 % of land parcel] [0.027 ha of land under tower(s) which is 0.18 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 200 metres from yard]	Low	Imperceptible
096	7.2	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
097	7.5	Grassland (Cattle or sheep) (farm yard located 280m North West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 280 metres from yard]	Very Low	Imperceptible
098	11.2	Grassland (Cattle or sheep) (farm yard located 110m South East of nearest conductor)	Medium	1 (T70)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.4 % of land parcel due to 0.145 hectares of access track (of which 0.11 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.158 ha of land disturbed during construction which is 1.4 % of land parcel] [0.028 ha of land under tower(s) which is 0.25 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 110 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
100	12.9	Willow Plantation (Bioremedial Plantation) Planned Poultry Development located on the land parcel	Very High	1 (T71)	Y	High potential impact from general disturbance to the willow plantation and in situ irrigation system	Note 1. Avoid damage to existing irrigation system by restricting traffic to designated tracks and working site. Premature harvesting of crop may be required to facilitate construction and stringing.	High impact from general disturbance to the plantation – it will have to be harvested to facilitate construction and stringing. Potential damage to in-situ irrigation system. Construction traffic on 2 % of land parcel due to 1 stringing location on the land parcel and 0.041 hectares of access track[5] and 1 tower site.	Major adverse	Note 2	[0.25 ha of land disturbed during construction which is 2 % of land parcel] [0.1225 ha of land under and around tower which is 1.0 % of land parcel is cleared permanently] [High potential for permanent disturbance due to presence of overhead line] [This assessment assumes that the willow crop can be grown and harvested without restriction due to overhead lines.] [Very Low impact on proposed Poultry Development]	Low	Moderate Adverse
101	12.8	Grassland (Cattle or sheep)	Medium	1 (T72)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2 % of land parcel due to 1 stringing location and 0.071 hectares of access track over green field and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.26 ha of land disturbed during construction which is 2 % of land parcel] [0.032 ha of land under tower(s) which is 0.25 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
103	1.3	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 4.7 % of land parcel due to 2 guarding locations	Slight adverse	Note 2	[0.061 ha of land disturbed during construction which is 4.7 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
104	5.8	Grassland (Cattle or sheep)	Medium	1 (T73)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.9 % of land parcel due to 0.029 hectares of access track and 1 tower site and 2 guarding locations	Slight adverse	Note 2	[0.229 ha of land disturbed during construction which is 3.9 % of land parcel] [0.03 ha of land under tower(s) which is 0.52 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse
106	1.4	Other Tree Plantation (non commercial) (farm yard located 40m North West of nearest conductor)	Medium	0	Y	High potential impact on trees	Note 1	Medium impact from general disturbance operation. Construction traffic on 11.6 % of land parcel due to 1 stringing location and 0.09 hectares of access track (of which 0.007 hectares of access track is existing) and 1 guarding location	Slight adverse	Note 2	[0.163 ha of land disturbed during construction which is 11.1 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 40 metres from yard]	Low	Imperceptible
107	8.4	Grassland (Cattle or sheep) (farm yard located 130m North West of nearest conductor)	Medium	2 (T74 & T75)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4.4 % of land parcel due to 0.121 hectares of access track[5] and 2 tower sites	Imperceptible	Note 2	[0.366 ha of land disturbed during construction which is 4.4 % of land parcel] [0.068 ha of land under tower(s) which is 0.81 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 130 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
108	16.7	Grassland (Cattle or sheep) (nearest farm yard located 150m South East of nearest conductor)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.4 % of land parcel due to 1 stringing location and 0.033 hectares of access track	Imperceptible	Note 2	[0.073 ha of land disturbed during construction which is 0.4 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 150 metres from yard]	Very Low	Imperceptible
109	11.7	Grassland (Cattle or sheep) & tillage (farm yard located 210m South East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 210 metres from yard]	Very Low	Imperceptible
110	2.1	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
111	13.3	Grassland (Cattle or sheep)	Medium	1 (T76)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.9 % of land parcel due to 2 stringing locations & under-grounding site(s) and 0.249 hectares of access track[5] (of which 0.164 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.381 ha of land disturbed during construction which is 2.9 % of land parcel] [0.05 ha of land under tower(s) which is 0.38 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
112	14.9	Grassland (Cattle or sheep) (farm yard located 175m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 175 metres from yard]	Very Low	Imperceptible
113	26.9	Grassland (Dairy) (nearest farm yard located 150m North East of nearest conductor)	High	3 (T77, 78 & part T79)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.9 % of land parcel due to 0.268 hectares of access track[5] (of which 0.065 hectares of access track is existing) and 3 tower sites	Slight adverse	Note 2	[0.509 ha of land disturbed during construction which is 1.9 % of land parcel] [0.086 ha of land under tower(s) which is 0.32 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 150 metres from yard]	Low	Slight adverse
114	22.1	Grassland (Cattle or sheep) (nearest farm yard located 60m West of nearest conductor)	Medium	2 (part T79 & T80)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1.3 % of land parcel due to 0.069 hectares of access track[5] and 2 tower sites and 1 guarding location	Imperceptible	Note 2	[0.293 ha of land disturbed during construction which is 1.3 % of land parcel] [0.051 ha of land under tower(s) which is 0.23 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 60 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
115	7.2	Grassland (Cattle or sheep) (nearest farm yard located 190m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Very low construction phase impact (1 guarding location)	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 190 metres from yard]	Very Low	Imperceptible
116	13.7	Grassland (Cattle or sheep) (farm building located 55m East of nearest conductor)	Medium	1 (T81)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.6 % of land parcel due to 2 stringing locations & 1 under-grounding site and 0.066 hectares of access track[5] (of which 0.065 hectares of access track is existing) and 1 tower site	Imperceptible	Note 2	[0.356 ha of land disturbed during construction which is 2.6 % of land parcel] [0.056 ha of land under tower(s) which is 0.41 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm building due to location of overhead line 55 metres from yard]	Low	Slight adverse
117	9.3	Grassland (Cattle or sheep) (farm yard located 180m South East of nearest conductor)	Medium	1 (T82)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.4 % of land parcel due to 0.149 hectares of access track[5] (of which 0.088 hectares of access track is existing) and 1 tower site	Imperceptible	Note 2	[0.224 ha of land disturbed during construction which is 2.4 % of land parcel] [0.032 ha of land under tower(s) which is 0.34 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 180 metres from yard]	Low	Imperceptible
118	14.3	Grassland (Dairy) (farm yard located 160m North East of nearest conductor)	High	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 160 metres from yard]	Very Low	Imperceptible
119	13.1	Grassland (Cattle or sheep)	Medium	2 (T83 & part of T87)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4 % of land parcel due to 2 stringing locations and 0.286 hectares of access track[5] (of which 0.042 ha of access track is existing) over green field and 2 tower sites	Slight adverse	Note 2	[0.518 ha of land disturbed during construction which is 4 % of land parcel] [0.07 ha of land under tower(s) which is 0.55 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
120	7.0	Grassland (Cattle or sheep) (farm building located 10m West of nearest conductor)	Medium	1 (T84)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 4 % of land parcel due to 0.043 hectares of access track[5] and 1 tower site and 2 guarding locations	Slight adverse	Note 2	[0.273 ha of land disturbed during construction which is 4 % of land parcel] [0.022 ha of land under tower(s) which is 0.31% of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on a single shed due to location of overhead line within10 metres]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
121	4.1	Grassland (Cattle or sheep) (farm yard located 110m South West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 0.5 % of land parcel due to 1 guarding location	Imperceptible	Note 2	[0.021 ha of land disturbed during construction which is 0.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 110 metres from yard]	Low	Imperceptible
122	3.3	Grassland (Cattle or sheep) (farm yard located 80m North East of nearest conductor)	Medium	1 (T85)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 6.2 % of land parcel due to 1 stringing location and 0.041 hectares of access track[5] over green field and 1 tower site	Slight adverse	Note 2	[0.204 ha of land disturbed during construction which is 6.2 % of land parcel] [0.049 ha of land under tower(s) which is 1.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Low	Slight adverse
124	4.7	Grassland (Cattle or sheep)	Medium	1 (T86)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4.6 % of land parcel due to 0.102 hectares of access track (of which 0.031 hectares of access track is existing) and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.216 ha of land disturbed during construction which is 4.6 % of land parcel] [0.025 ha of land under tower(s) which is 0.53 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
125	2.3	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
129	2	Grassland (Cattle or sheep) (farm yard located 30m North West of nearest conductor)	Medium	1 (part of T87)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4.2 % of land parcel due to 0.041 hectares of access track (of which 0.019 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2	[0.083 ha of land disturbed during construction which is 4.2 % of land parcel] [0.008 ha of land under tower(s) which is 0.4 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 30 metres from yard]	Very Low	Imperceptible
130	3.7	Grassland (Cattle or sheep) (farm yard located 150m South East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 150 metres from yard]	Very Low	Imperceptible
131	6.8	Grassland (Cattle or sheep) (farm yard located 100m South East of nearest conductor)	Medium	1 (T88)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.6 % of land parcel due to 0.017 hectares of access track and 1 tower site and 1 guarding location	Slight adverse	Note 2	[0.177 ha of land disturbed during construction which is 2.6 % of land parcel] [0.032 ha of land under tower(s) which is 0.47 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 100 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
132	31.5	Grassland (Cattle or sheep) (nearest farm yard located 50m East of nearest conductor)	Medium	3 (T89, T93, T94)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.7 % of land parcel due to 2 stringing locations & under-grounding site(s) and 0.116 hectares of access track[5] (all of which is existing) and 3 tower sites	Slight adverse	Note 2	[0.545 ha of land disturbed during construction which is 1.7 % of land parcel] [0.115 ha of land under tower(s) which is 0.37 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 50 metres from yard]	Low	Imperceptible
133	10.5	Grassland (Cattle or sheep) (nearest farm yard located 160m West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.1 % of land parcel due to 0.193 hectares of access track (of which 0.138 hectares is existing) and an under-grounding trench	Imperceptible	Note 2	[0.115 ha of land disturbed during construction which is 1.1 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 160 metres from yard]	Very Low	Imperceptible
134	5.2	Grassland (Cattle or sheep) (farm yard located 230m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 230 metres from yard]	Very Low	Imperceptible
135	20.2	Grassland (Dairy) (farm yard located 80m East of nearest conductor)	High	1 (T90)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 1 % of land parcel due to 0.045 hectares of access track over green field and 1 tower site and 1 guarding location	Imperceptible	Note 2	[0.188 ha of land disturbed during construction which is 1 % of land parcel] [0.028 ha of land under tower(s) which is 0.14 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Low	Slight adverse
136	4.2	Grassland (Cattle or sheep) (farm yard located 150m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 150 metres from yard]	Very Low	Imperceptible
137	6.7	Grassland (Cattle or sheep)	Medium	1 (T91)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.7 % of land parcel due to 0.056 hectares of access track[5] and 1 tower site	Slight adverse	Note 2	[0.179 ha of land disturbed during construction which is 2.7 % of land parcel] [0.028 ha of land under tower(s) which is 0.42 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Imperceptible
138	7.2	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
140	5.8	Grassland (Cattle or sheep)	Medium	1 (T92)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 4.4 % of land parcel due to 0.155 hectares of access track[5] (of which 0.024 ha is existing track) and 1 tower site and part of an under-grounding trench	Slight adverse	Note 2	[0.257 ha of land disturbed during construction which is 4.4 % of land parcel] [0.026 ha of land under tower(s) which is 0.45 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Low	Slight adverse

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Significance of impact**	**Mitigation Measures**	**Nature of post-mitigation impact** (see Note 3 to explain terminology)	**Magnitude of Residual Impact**	**Significance of residual impact** [6]
141	1.5	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low (due to an under-grounding trench) and 0.016 hectares of access track over green field – 3.3% of land parcel affected.	Slight adverse	Note 2	[0.049 ha of land disturbed during construction which is 3.3 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
143	5.8	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
144	7.1	Grassland (Cattle or sheep) (farm yard located 80m West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.5 % of land parcel due to guarding location	Imperceptible	Note 2	[0.033 ha of land disturbed during construction which is 0.5 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Low	Imperceptible
145	24.9	Grassland (Cattle or sheep) (farm yard located 190m North East of nearest conductor)	Medium	2 (T95 & 97)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.2 % of land parcel due to 0.18 hectares of access track over green field and 2 tower sites and 1 guarding location and an under-grounding trench and 1 stringing site	Slight adverse	Note 2	[0.538 ha of land disturbed during construction which is 2.2 % of land parcel] [0.087 ha of land under towers which is 0.35 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 190 metres from yard] [Very low impact from the location of the overhead lines south of the border]	Low	Slight adverse
146	3.4	Grassland (Cattle or sheep) (nearest farm yard located 120m East of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.2 % of land parcel due to 0.08 hectares of access track (of which 0.015 ha is existing track) and an under-grounding trench	Slight adverse	Note 2	[0.11 ha of land disturbed during construction which is 3.2 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 120 metres from yard]	Low	Imperceptible
147	2.5	Grassland (Cattle or sheep) (farm yard located 230m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 230 metres from yard]	Very Low	Imperceptible
148	3.7	Grassland (Cattle or sheep) (farm yard located 80m East of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Very Low	Imperceptible
149	10.8	Grassland (Cattle or sheep)	Medium	1 (T96)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.5 % of land parcel due to 0.096 hectares of access track (of which 0.06 hectares is existing) and 1 tower site	Slight adverse	Note 2	[0.16 ha of land disturbed during construction which is 1.5 % of land parcel] [0.03 ha of land under tower which is 0.3 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 230 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
151	5.8	Grassland (Cattle or sheep) (farm yard located 80m West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Very Low	Imperceptible
153	9.2	Grassland (Cattle or sheep) (farm yard located 170m West of nearest conductor)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.5 % of land parcel due to 1 stringing location and 0.075hectares of access track (of which 0.071 hectares of access track is existing)	Imperceptible	Note 2	[0.044 ha of land disturbed during construction which is 1 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 170 metres from yard]	Very Low	Imperceptible
154	1.4	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
155	0.8	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
156	10.9	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Very low construction phase impact from disturbance to the farm enterprise and construction traffic at the guarding location	Imperceptible	Note 2	[0.03 ha of land disturbed during construction which is 0.2 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
157A	12.5	Grassland (Cattle or sheep) (farm yard located 80m East of nearest conductor)	Medium	1 (T98)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 1.8 % of land parcel due to 0.051 hectares of access track (of which 0.039 hectares of access track is existing) and 1 tower site and guarding locations	Slight adverse	Note 2	[0.222 ha of land disturbed during construction which is 1.8 % of land parcel] [0.032 ha of land under tower(s) which is 0.26 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 80 metres from yard]	Medium	Slight adverse
159	10.3	Grassland (Cattle or sheep) (nearest farm yard located 90m West of nearest conductor)	Medium	1 (T99)	N	High potential impact from general disturbance, construction traffic and spread of disease	Note 1	Low impact from to general disturbance and construction traffic on 2.1 % of land parcel due to 0.055 hectares of access track over green field and 1 tower site and guarding locations	Imperceptible	Note 2	[0.219 ha of land disturbed during construction which is 2.1 % of land parcel] [0.032 ha of land under tower which is 0.31 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of power line 90 metres from yard]	Low	Imperceptible
160	17	Grassland (Cattle or sheep) (farm yard located 190m West of nearest conductor)	Medium	2 (T101 & part T102)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.5 % of land parcel due to 0.203 hectares of access track[5] (of which 0.061 hectares of access track is existing) and 2 tower sites and 2 guarding locations and 1 stringing site	Slight adverse	Note 2	[0.425 ha of land disturbed during construction which is 2.5 % of land parcel] [0.055 ha of land under towers which is 0.32 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 190 metres from yard]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
161	5.6	Grassland (Cattle or sheep) (farm yard located 160m West of nearest conductor)	Medium	1 (T100)	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 3.1% of land parcel due to 0.048 hectares of access track[5] and 1 tower site	Imperceptible	Note 2	[0.171 ha of land disturbed during construction which is 3.1 % of land parcel] [0.025 ha of land under tower(s) which is 0.45 % of land parcel] [Medium potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 160 metres from yard]	Low	Imperceptible
165	8.2	Grassland (Cattle or sheep) (nearest farm yard located 10m South West of nearest conductor)	Medium	1 (part of T102)	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation. Construction traffic on 2.6 % of land parcel due to 1 stringing locations & guarding location(s) and 0.082 hectares of access track (of which 0.015 hectares of access track is existing) and 1 tower site	Slight adverse	Note 2 Maintain 5.3m clearance near buildings	[0.217 ha of land disturbed during construction which is 2.6 % of land parcel] [0.019 ha of land under tower(s) which is 0.23 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line] [Medium impact on farm shed due to location of overhead line 10 metres from yard – very low impact on remainder of land]	Medium	Slight adverse
**167	5.6	Grassland (Cattle or sheep) (farm yard located 270m East of nearest conductor)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 270 metres from yard]	Very Low	Imperceptible
**1000	1.1	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1003	4.7	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	Very Low construction phase impact (existing access track used)	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1004	5.7	Grassland (Cattle or sheep) (farm yard located 220m South West of nearest conductor)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	No construction phase impact	Imperceptible	Note 2	[0.048 ha of land disturbed during construction which is 0.8 % of land parcel] [Very Low potential for permanent disturbance due to presence of overhead line] [Very Low potential impact on farm yard due to location of overhead line 220 metres from yard]	Very Low	Imperceptible
1007	3.8	Grassland (Cattle or sheep) (farm yard located 110m South West of nearest conductor)	Medium	0	N	Imperceptible construction phase impact	Note 1	Very Low construction phase impact (existing access track used)	Imperceptible	Note 2	[Very Low potential impact on farm yard due to location of overhead line 110 metres from yard] [Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1026	1.2	Grassland (Cattle or sheep)	Medium	0	Y	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Medium impact from general disturbance to the farming operation. Construction traffic on 5.2 % of land parcel due to 1 stringing location and 0.022 hectares of access track	Slight adverse	Note 2	[0.062 ha of land disturbed during construction which is 5.2 % of land parcel] [Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1028	2.2	Forestry	Very High	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
**1029	5.2	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1030	1.7	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1031	4.9	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1032	2.7	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1034	3.8	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1035	3.1	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1036	12.3	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease.	Note 1	High impact due to loss of 1.0 hectares (8% of land parcel) to the construction of the substation in Turleenan	Moderate adverse	Note 2	High impact due to loss of 1 hectares (8% of land parcel) to the construction of the substation in Turleenan	High	Moderate adverse
**1038	3.9	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to 3 % presence of overhead line]	Very Low	Imperceptible
**1039	2	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1051	2.9	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1052	15.1	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1053	1.2	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1054	4.2	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1055	2.3	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1057	8.9	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensiti-vity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
**1058	3.3	Grassland (Cattle or sheep)	Medium	0	N	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Very Low impact from general disturbance to the farming operation. Construction traffic on 0.1 % of land parcel due to 0.002 hectares of access track	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1060	4.3	Tillage	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1061	0.6	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1062	4.8	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1064	2	Grassland (Cattle or sheep)	Medium	0	N	Imperceptible construction phase impact	Note 1	Imperceptible construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1065	1.6	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1067	1.1	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1070	4	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1072	5.4	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1073	2.7	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1074	3.6	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1079	2.5	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1080	4.6	Tillage	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1082	18.6	Grassland (Cattle or sheep)	Medium	0	-	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	Low impact from general disturbance to the farming operation and traffic on 3.6 % of land parcel due to diversion of existing 275 kV Overhead Line	Slight	Note 2	[0.88 ha of land disturbed during diversion of 275 kV Overhead Line - which is 4 % of land parcel]	Low	Imperceptible
**1083	3.4	Grassland (Cattle or sheep)	Medium	0	-	High potential impact from general disturbance to the farming operation, construction traffic and spread of disease	Note 1	High impact from general disturbance to the farming operation and traffic on 20 % of land parcel due to diversion of existing 275 kV Overhead Line	Moderate adverse	Note 2	[0.68 ha of land disturbed during diversion of 275 kV Overhead Line - which is 20 % of land parcel]	Low	Imperceptible

Farm ID (** - Note 4)	Land area (ha)	Farm Enterprise	Sensitivity	Number of Towers	Stringing locations (Yes/No)	Construction Phase Impact Assessment				Operational Phase Assessment			
						Nature of pre-mitigation impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Significance of impact	Mitigation Measures	Nature of post-mitigation impact (see Note 3 to explain terminology)	Magnitude of Residual Impact	Significance of residual impact [6]
**1084	1.7	Grassland (Cattle or sheep) (farm yard 135m West of the nearest conductor)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible
**1085	0.7	Grassland (Cattle or sheep) (planned poultry development located 15m west of nearest conductor	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Low potential for permanent disturbance due to presence of overhead line] [Very Low impact on proposed Poultry Development]	Very Low	Imperceptible
**1086	5.0	Grassland (Cattle or sheep) (farm yard 160m West of the nearest conductor)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line] [No impact on farm yard]	Very Low	Imperceptible
**1087	4.8	Grassland (Cattle or sheep)	Medium	0	N	No construction phase impact	Note 1	No construction phase impact	Imperceptible	Note 2	[Very Low potential for permanent disturbance due to presence of overhead line]	Very Low	Imperceptible

Note 1: The mitigation measures in section 14.6.1 will be adhered to prevent spread of animal and crop diseases and to minimise disturbance on farms.

Note 2: The mitigation measures in section 14.6.2 will be adhered to during the operational phase and where maintenance work is required the mitigation measures as specified in section 1.6.1 will be adhered to.

Note 3 : The nature and magnitude of impact is determined by assessing the following impacts; The predicted disturbance impact to the farm enterprise caused by construction activity; area of land damage/disturbance caused by temporary structures such as guarding locations, under-grounding trenches, temporary access tracks, stringing locations and working sites around towers; permanent land loss i.e. the area of the tower bases (plus 2m buffer strip to allow for wastage; potential impacts on farm yards and farm buildings; potential disturbance to the farm from the presence of the conductors where inconvenience/disturbance may be experienced due to health and safety considerations. The result of a single impact will only contribute to part if the overall impact on the land parcel e.g. Medium magnitude of potential disturbance due to impact on a farm yard may only result in a Slight Adverse or Imperceptible impact in the absence of other impacts.

Note 4: ** Denotes land parcels where the conductors do not cross over part of the land parcel; but the land parcel is within 50m of the outer conductor or may be affected by an access track, stringing site or guarding location.

Note 5: The temporary field access tracks and working sites around towers will be stoned for 53 of the tracks and 40 tower working areas.

Note 6: The average size of the land registry land parcels is approximately 10 hectares. The expected average size of farms along the Proposed Development is approximately 31 hectares. Assessing impacts based on the size of the land registry land parcels will tend to exaggerate overall impacts.

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