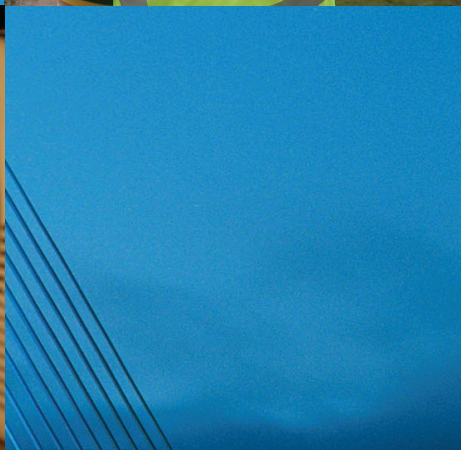
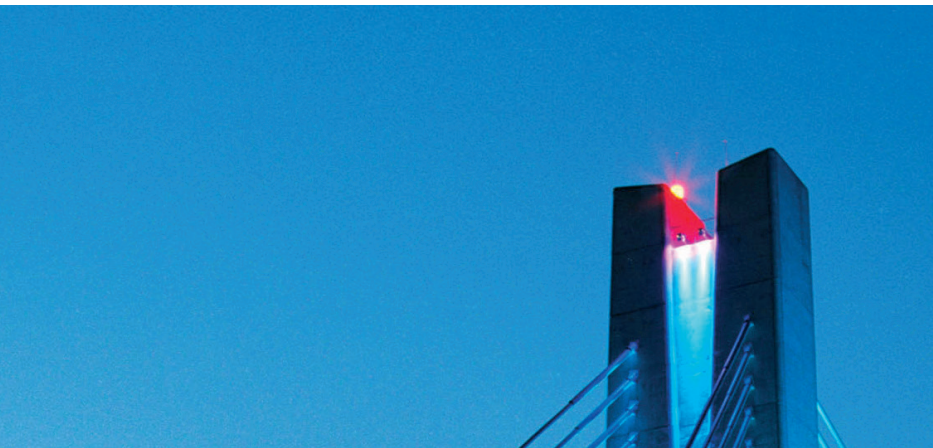




North-South 400kV Interconnection Development



Part Funded by the
EU-TEN-E Initiative

**Response to the
Issues Raised in
Submissions /
Observations**

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	OVERVIEW OF STATUTORY CONSULTATION PHASE	1
1.2	REVIEW OF SUBMISSIONS	2
1.3	RESPONSE TO SUBMISSIONS	3
1.4	STRUCTURE OF REPORT	3
1.4.1	References in this Report	4
2	STATUTORY PROCESS, PLANNING AND PROPERTY	6
2.1	STATUTORY PROCESS	6
2.1.1	Overview	6
2.1.2	Response to General Issues Raised	6
2.1.3	Statutory Process	6
2.1.4	EIA and EIS	7
2.1.5	Appropriate Assessment and Natura Impact Statement	12
2.1.6	Strategic Environmental Assessment	12
2.1.7	Application for Planning Approval.....	15
2.1.8	Statutory Consultation Process	18
2.1.9	Project of Common Interest.....	19
2.1.10	Costs of Participation in the Planning Process.....	20
2.2	PLANNING	20
2.2.1	Overview	20
2.2.2	Response to General Issues Raised	20
2.2.3	Potential to Impact Future Planning Applications	20
2.2.4	Consideration of SID Applications and the County Development Plans.....	21
2.2.5	Planning Precedent – Cregg Windfarm	22
2.2.6	Planning Conditions.....	23
2.3	PROPERTY.....	24
2.3.1	Overview	24
2.3.2	Response to General issues raised	24
2.3.3	Potential Impact on Property Values	24
2.3.4	Potential Impact on Agricultural Land Values	26
3	NEED FOR THE PROJECT	28

3.1	OVERVIEW	28
3.2	RESPONSE TO GENERAL ISSUES RAISED	28
3.2.1	Why does the Island of Ireland need a Second North-South Interconnector?	28
3.2.2	What is the Transmission System and its Purpose?	30
3.2.3	What do we Plan the Transmission Network in Accordance with?	32
3.2.4	Why do we Need a Total Transfer Capacity (TTC) of the Magnitude of 1,500 MVA?	33
3.2.5	Why can we not use the Existing Interconnector to its Full Potential?	36
3.2.6	How does the proposed interconnector deliver benefits?	39
3.2.7	What does this proposed interconnector do for the North-East Area of Ireland?	40
3.2.8	Cost Benefit Analysis	41
4	CONSULTATION AND PROJECT METHODOLOGY	42
4.1	CONSULTATION	42
4.1.1	Overview	42
4.1.2	Consultation with the Public	43
4.1.3	General Issues Raised in respect of Public Consultation	44
4.1.4	Consultation with Landowners	50
4.1.5	General Issues Raised under Consultation with Landowners	55
4.1.6	Other General Issues Arising	58
4.1.7	Response to Specific Issues raised in Observer Submissions	58
4.2	PROJECT METHODOLOGY	60
4.2.1	Overview	60
4.2.2	Response to General Issues Raised	60
4.2.3	Response to Specific Issues raised by Prescribed Bodies	67
4.2.4	Response to Specific Issues Raised by Observers	67
5	ALTERNATIVES	70
5.1	OVERVIEW	70
5.2	RESPONSE TO GENERAL ISSUES RAISED	70
5.2.1	Consideration of Alternatives	70
5.2.2	Use of Existing Ireland to Northern Ireland Interconnection	72
5.2.3	Use of Other Existing Interconnectors	72
5.2.4	Consideration of Undergrounding Options	73
5.2.5	Building New Generation or Conversion of Existing Generation	77
5.2.6	Consideration of Do Nothing Scenario	78
5.2.7	Tower Design	78

5.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES.....	79
5.3.1	Monaghan County Council (SI -2015-0215)	79
5.3.2	SI (2015) 214 – Cavan County Council.....	93
6	CONSTRUCTION	95
6.1	OVERVIEW	95
6.2	RESPONSE TO GENERAL ISSUES RAISED.....	95
6.2.1	Potential Impact from Access Routes	95
6.2.2	Potential Health and Safety Impact	97
6.2.3	Construction Environmental Management Plan (CEMP)	97
6.2.4	Potential Impact from Construction Details (Footprint / Specifications).....	97
6.3	SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	97
6.3.1	SI (2015) 207 – Department of Arts, Heritage and the Gaeltacht.....	97
6.3.2	Monaghan County Council (SI -2015-0215)	98
6.3.3	Transport Infrastructure Ireland (TII) (SI-2015-230)	100
6.3.4	Health Service Executive (HSE) (SI -2015-0 210)	100
6.3.5	Northern & Western Regional Assembly (SI -2015-0026).....	101
6.3.6	Irish Water (SI -2015-0016)	101
6.4	SPECIFIC ISSUES RAISED BY OBSERVERS	102
6.4.1	Co. Monaghan Anti-Pylon Committee (SI 2015-278)	102
6.4.2	North East Pylon Pressure (NEPP) (SI 2015-332).....	103
6.4.3	Councillor Seamus Coyle (SI 2015-0118).....	104
6.4.4	Maria & Philip Fitzpatrick (SI 2015-0147).....	104
6.4.5	Maurice & Joanne McAdam (SI 2015-0171).....	105
7	ELECTRIC AND MAGNETIC FIELDS (EMF)	106
7.1	OVERVIEW	106
7.2	RESPONSE TO GENERAL ISSUES RAISED.....	106
7.2.1	Potential Impact on Humans.....	107
7.2.2	Potential Impact on Livestock	108
7.2.3	Potential Impact on Crop / Vegetation	109
7.2.4	Potential Impact on Other Animals	109
7.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	110
7.3.1	Response to Specific Issues raised by Prescribed Bodies.....	110
7.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	112
7.4.1	Humans.....	112

7.4.2 Cows and Pigs.....	117
7.4.3 Horses.....	117
7.4.4 Birds.....	118
7.4.5 Salmon.....	119
8 TRANSBOUNDARY IMPACTS, CUMULATIVE IMPACTS AND IMPACT INTERACTIONS.....	121
8.1 OVERVIEW.....	121
8.2 RESPONSE TO GENERAL ISSUES RAISED.....	121
8.2.1 Potential Transboundary Impacts	121
8.2.2 Potential Cumulative Impact and Impact Interactions	122
8.2.3 Joint Environmental Report (JER).....	125
9 HUMAN BEINGS – POPULATION AND ECONOMIC	126
9.1 OVERVIEW	126
9.2 RESPONSE TO GENERAL ISSUES RAISED.....	126
9.2.1 Potential Impact on Community and Recreational Amenity and Activities.....	126
9.2.2 Potential Impact to Image Perception of Area/Town	128
9.2.3 Potential Impact on Local Economy (Job Creation)	129
9.2.4 Potential Impact due to Proximity to Settlements/Population	130
9.2.5 Potential Impact on Community Events.....	131
9.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	131
9.3.1 Monaghan County Council (SI-2015-0215)	131
9.3.2 Cavan County Council (SI-2015-0215).....	132
9.3.3 Meath County Council (SI-2015-0216).....	132
9.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	132
9.4.1 Meath County Council Elected Members (SI-2015-0002).....	132
9.4.2 Monaghan Anti Pylon Committee (SI-2015-0278)	133
10 HUMAN BEINGS – LAND USE.....	134
10.1 OVERVIEW	134
10.1.1 North East Pylon Pressure (NEPP) (SI-2015-0332).....	134
10.2 RESPONSE TO GENERAL ISSUES RAISED	135
10.2.1 Potential Impact on Land Use	135
10.2.2 Potential Impact on Farming during Construction	138
10.2.3 Potential Impact on Farming during Operation.....	142
10.2.4 Potential Impact on the Future Development of the Farm	147
10.2.5 Damage / Injury to Agriculture / Forestry.....	148

10.2.6	Further compensation and Payment Issues.....	148
10.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	149
10.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	149
10.4.1	Elected Members of Monaghan County Council (SI-2015-0215)	149
10.4.2	Elected Members of Meath County Council (S1-2015-0002)	149
10.4.3	Tom and Elizabeth Byrne (SI-2015-0048).....	150
10.4.4	Philip and Ana Collins (SI-2015-0054)	150
10.4.5	Farming Organisations Cavan, Monaghan and Meath County Executives	151
10.4.6	Joseph Boylan (SI-2015-0184)	151
10.4.7	Gerard and Glynis McAdam (SI-2015-0193)	152
10.4.8	County Monaghan Anti-Pylon Committee (SI-2015-0278)	153
10.4.9	Michael Vaughan and Family (SI-2015-0542) and Response by the Applicant	153
10.4.10	Kilmessan IFA (SI-2015-0610).....	153
11	HUMAN BEINGS TOURISM AND AMENITY.....	155
11.1	OVERVIEW	155
11.2	RESPONSE TO GENERAL ISSUES RAISED.....	155
11.2.1	Potential Impact on Tourism and Amenity Resources.....	156
11.2.2	Potential impact on Tourism and Amenity Facilities	157
11.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	157
11.3.1	Fáilte Ireland (SI-2015-0213).....	157
11.3.2	Monaghan County Council (SI-2015-0215)	166
11.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	167
11.4.1	Meath County Council Elected Members (SI-2015-0002)	167
11.4.2	Sinn Fein (SI-2015-0275)	167
11.4.3	Monaghan Anti-Pylon Committee (SI-2015-0278)	167
11.4.4	North East Pylon Pressure (SI-2015-032).....	168
12	FLORA AND FAUNA.....	170
12.1	OVERVIEW	170
12.2	RESPONSE TO GENERAL ISSUES RAISED.....	170
12.2.1	Lack of land access and reliance on pre-construction surveys	170
12.2.2	Potential Impact on Protected Areas.....	171
12.2.3	Potential Impact on Protected Species	172
12.2.4	Potential Impact on locally Important Habitats.....	173
12.2.5	Potential Impact on Birds.....	174

12.2.6	Potential Impact on Fisheries.....	175
12.2.7	Potential Impact of Invasive Species.....	176
12.2.8	Impacts to Hedgerows to Facilitate Access Routes	177
12.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	177
12.3.1	Department of Arts, Heritage and the Gaeltacht (DAHG) (SI-2015-0207).....	177
12.3.2	Inland Fisheries Ireland (SI-2015-0212)	205
12.3.3	Cavan County Council (SI-2015-0214).....	206
12.3.4	Monaghan County Council (MCC) (SI-2015-0215)	206
12.3.5	Meath County Council (SI-2015-0216).....	209
12.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	211
12.4.1	Elected Members of Meath County Council (SI-2015-0002)	211
12.4.2	John McGuinness (SI-2015-0049)	211
12.4.3	James and Mary McNally (SI-2015-0091)	212
12.4.4	Kilbride Anglers Club (SI-2015-0134)	213
12.4.5	Paul and Colette McElroy (SI-2015-0138)	213
12.4.6	Peadar Clinton (SI-20115-0142).....	213
12.4.7	Brian and Cecil Burgess (SI-2015-0148)	214
12.4.8	Nigel Donaldson (SI-2015-0150)	214
12.4.9	Lough Egish Rod and Gun Club (SI-2015-0162).....	214
12.4.10	Val Martin (SI-2015-0172).....	215
12.4.11	Co. Monaghan Anti-Pylon Committee (SI-2015-0278)	215
12.4.12	North East Pylon Pressure (SI-2015-0332).....	215
12.4.13	NV Irish Farm LLC (SI-2015-0335)	216
13	SOILS, GEOLOGY AND HYDROGEOLOGY	217
13.1	OVERVIEW	217
13.2	RESPONSE TO GENERAL ISSUES RAISED.....	217
13.2.1	Potential Impact on Mines and Quarries	217
13.2.2	Potential Impact on Soils	218
13.2.3	Potential Impact on Groundwater Wells	219
13.2.4	Potential Impact on Drainage	219
13.2.5	Potential Impact on Geological Heritage	219
13.2.6	Potential Waste Impacts.....	219
13.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	220
13.3.1	Northern and Western Regional Assembly (SI-2015-0026).....	220

13.3.2	Health Service Executive (SI-2015-210)	220
13.3.3	Inland Fisheries Ireland (SI-2015-0212)	221
13.3.4	Monaghan County Council (SI-2015-0215)	221
13.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	222
13.4.1	John Morgan (SI-2015-0055)	222
13.4.2	Various (SI-2015-0059), (SI-2015-0184) and (SI-2015-0185))	222
13.4.3	Lough Egish Rod and Gun Club (SI-2015-0162)	222
13.4.4	NEPP (SI-2015-0332)	223
14	WATER	224
14.1	OVERVIEW	224
14.2	RESPONSE TO GENERAL ISSUES RAISED	224
14.2.1	Potential Impact on Flooding	224
14.2.2	Potential Impact on Drainage Ditches	224
14.2.3	Potential Impact on Rivers, Lakes and Streams	224
14.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	225
14.3.1	Health Service Executive (SI-2015-0210)	225
14.3.2	Inland Fisheries Ireland (SI-2015-0212)	226
14.3.3	Monaghan County Council (SI-2015_0215)	226
14.3.4	Meath County Council (SI-2015-0216)	229
14.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	231
14.4.1	Maurice and Joanne McAdam (SI-2015-0171)	231
14.4.2	Gabriel Ward (SI-2015-0296)	231
15	NOISE & VIBRATION AND AIR QUALITY & CLIMATE	232
15.1	OVERVIEW	232
15.2	RESPONSE TO GENERAL ISSUES RAISED	232
15.2.1	Potential Impact from Construction Noise	232
15.2.2	Potential Impact of Operational Noise	233
15.2.3	Concerns relating to Mitigation Measures	237
15.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	238
15.3.1	Monaghan County Council (SI-2015-0215)	238
15.3.2	Meath County Council (SI-2015-0216)	238
15.3.3	Sinn Féin (SI-2015-0275)	239
15.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	240
15.4.1	Electricity Association of Ireland (EAI) (SI-2015-0102)	240

15.4.2	Receptors with Medical Conditions	241
16	LANDSCAPE	242
16.1	OVERVIEW	242
16.2	RESPONSE TO GENERAL ISSUES RAISED.....	242
16.2.1	Impact on Protected / Locally Significant Views.....	242
16.2.2	Impact on Dwellings.....	244
16.2.3	Impact on Landscape Character and Visual Amenity.....	244
16.2.4	Impact on Drumlins / Elevated Sites	246
16.2.5	Number, Location, Orientation, Quality and Scope of Photomontages	246
16.2.6	General Reference to Mitigation Measures.....	248
16.2.7	Reference to Alternatives / Undergrounding	249
16.2.8	Impact on Specific Heritage / Protected Structures	249
16.2.9	Impact on Historic Gardens and Designed Landscapes	249
16.2.10	Impact on Tourism	251
16.2.11	Development in conflict with National Landscape Strategy for Ireland 2015-2025.	251
16.2.12	Potential Cumulative Impacts.....	252
16.2.13	Impact on Lakes	252
16.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	255
16.3.1	Northern and Western Regional Assembly (SI-2015-0026).....	255
16.3.2	Department of Arts, Heritage and the Gaeltacht (SI-2015-0207).....	255
16.3.3	An Taisce (SI-2015-0209)	256
16.3.4	Fáilte Ireland (SI-2015-0213).....	256
16.3.5	Cavan County Council (SI-2015-0214).....	257
16.3.6	Monaghan County Council (SI-2015-0215)	259
16.3.7	Meath County Council (SI-2015-0216).....	264
16.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	268
16.4.1	Elected Members of Meath County Council (SI-2015-0002)	268
16.4.2	Helen McEntee T.D. (SI-2015-0124).....	270
16.4.3	Potential Impact on Cultural Heritage sites in County Meath.....	270
16.4.4	Maria and Philip Fitzpatrick (SI-2015-0147).....	271
16.4.5	County Monaghan Anti-Pylon Committee (SI-2015-0278)	271
16.4.6	North East Pylon Pressure (NEPP) (SI-2015-0332).....	272
16.4.7	North East Pylon Pressure (NEPP) (SI-2015-0332 – Appendix 13).....	274

16.4.8	North East Pylon Pressure (NEPP) (SI-2015-0332 – Appendix 14)	276
16.4.9	Braccanby Irish Farm LLC (SI-2015-0336)	277
16.4.10	Meath Archaeological and Historical Society (SI-2015-0337)	278
16.4.11	Philip Murtagh and Family (SI-2015-0475) – Photomontage at Ardbraccan	278
17	MATERIAL ASSETS GENERAL	280
17.1	OVERVIEW	280
17.2	RESPONSE TO GENERAL ISSUES RAISED	280
17.2.1	Aviation in Ireland	280
17.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	283
17.3.1	Northern and Western Regional Assembly (SI-2015-0026)	283
17.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	284
17.4.1	Lough Egish Community Development Limited (SI-2015-0281)	284
17.4.2	Kevin Rice (SI-2015-0072)	284
17.4.3	NEPP (SI-2015-0332)	285
17.4.4	Michael Munnely (SI-2015-0628)	287
18	MATERIAL ASSETS TRAFFIC	289
18.1	OVERVIEW	289
18.1.1	Potential Impact of Construction Traffic on Narrow Roads and Numbers and Frequency of Construction Traffic Generated by the Works	289
18.1.2	Potential Impact of Construction Traffic on Safety and Health of adjacent landowners	291
18.1.3	Potential Impact of Construction Traffic on the Safety of Hunt events along local roads	292
18.1.4	Development of a Detailed Construction Stage Traffic Management Plan	292
18.1.5	Use of temporary access routes on private laneways where no access has been granted by landowner	293
18.1.6	Potential Impact of Construction Traffic on Racehorses exercising on Roads	294
18.2	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	294
18.2.1	Northern & Western Regional Assembly (SI-2015-0026)	294
18.2.2	Transport Infrastructure Ireland (TII) (SI-2015-0030)	295
18.2.3	Cavan County Council (SI-2015-0214)	297
18.2.4	Monaghan County Council (SI-2015-0215)	298
18.2.5	Meath County Council (SI-2015-0216)	302
18.3	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	303

18.3.1	James and Mary McNally (SI-2015-0091)	303
18.3.2	Naoise Gordon (SI-2015-0133) and Dympna McShane (SI-2015-0137)	303
19	CULTURAL HERITAGE	306
19.1	OVERVIEW	306
19.2	RESPONSE TO GENERAL ISSUES RAISED	306
19.2.1	Submissions relating to the Potential Negative Impacts on the Cultural Heritage Resource	306
19.2.2	Potential Impacts on the Settings of Cultural Heritage Sites	309
19.2.3	Potential Impacts on Brittas House and Demesne	314
19.2.4	Compliance with Heritage Policies within the Meath County Development Plan ..	315
19.3	RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES	316
19.3.1	Department of Arts, Heritage and the Gaeltacht (SI-2015-0207).....	316
19.3.2	An Taisce (SI-2015-0209)	323
19.3.3	Cavan County Council (SI-2015-0214).....	324
19.3.4	Monaghan County Council (SI-2015-0215)	324
19.3.5	Meath County Council (SI-2015-0216).....	329
19.4	RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS	333
19.4.1	Elected Members of Meath County Council (SI-2015-002)	333
19.4.2	Kathleen Hughes (SI-2015-0056)	336
19.4.3	Dunderry Fair Committee (SI-2015-0103) and Seamus Bowman (SI-2015-0131) ..	336
19.4.4	Robert Kenny (SI-2015-0114).....	336
19.4.5	Gerald and Glynis McAdam (SI-2015-0193).....	338
19.4.6	Jim and Mary Connolly and Family (SI-2015-0226).....	339
19.4.7	Submission from Sinn Fein (SI-2015-0275)	340
19.4.8	Andrew Clarke and Family (SI-2015-0277).....	341
19.4.9	Submission from Gabriel Ward (SI-2015-0296) and Denis Ward (SI-2015-029).....	341
19.4.10	Submission from North East Pylon Pressure (SI-2015-0332)	342
19.4.11	NV Irish Farm LLC (SI-2015-0335)	344
19.4.12	Ronan O'Loughlin and Miriam Reilly (SI-2015-0382)	345
19.4.13	St Johns Old Cemetery Restoration Group (SI-2015-0418)	345
19.4.14	Maria and John James Finnegan (SI-2015-0439)	346
19.4.15	The Residents of Bohermeen and the New Line (SI-2015-0474) and Philip Murtagh and Family (SI-2015-0474).....	347
20	CONCLUSION	348

APPENDICES

Appendix 1.1	List of Observers
Appendix 1.2	Nos. and Breakdown of Submissions / Observations raising particular Issues
Appendix 13.3	Response of EirGrid PLC to Legal Issues Raised
Appendix 7.1	Overview of Scientific Assessments of Research on ELF EMF and Health, and Epidemiologic Studies, 2007-2015
Appendix 10.1	Response to Equine Concerns (Your Grid, Your Views, Your Tomorrow)
Appendix 16.1	Landscape Visuals
Appendix 18.1	Alternative Haul Routes
Appendix 19.1	Cultural Heritage Potential Impact on Setting

LIST OF FIGURES

Figure 2.1:	Extract from Grid25 IP, Environmental Report (page 97)	14
Figure 2.2:	Extract from Grid25 IP, Environmental Report (page 105)	14
Figure 3.1:	Map of transmission system	31
Figure 3.2:	The electricity transmission grid at Monaghan town (Lisdrum on Map).....	33
Figure 3.3:	Unrestricted market flows between Ireland and Northern Ireland and vice versa from 2009 to 2015	34
Figure 3.5:	Histogram showing North South flows with the new Interconnector in 2020	35
Figure 3.6:	Histogram showing North South flows with the new Interconnector in 2030	35
Figure 3.7:	Electricity transmission map between Ireland and Northern Ireland.....	37
Figure 5.1	Options for Line Straight 105-109 (Towers 107 – 109)	79
Figure 5.2	Options for Line Straights 112-116,116-118,118-121,121-126 (Towers 112, 114, 116-125)	81
Figure 5.3	Options for Line Straights 3112-116,116-118,118-121,121-126, Towers 112, 114, 116-125	82
Figure 5.4	Options for Line Straights 132-136,136-140,140-142 and 142-149 (Towers 133,134.137,139,141,144 and 146-150).....	83
Figure 5.6	Options for Line Straights 1149-154 (Tower 149-154).....	84
Figure 5.7	Options for Line straights Tower 154 -159.....	86
Figure 5.8	Options for Line straights 161- 166, 166-169 Tower 164, 166, 167	87
Figure 5.9	Options for Line straights 169-176, 176-181, Tower 171-176, 179	88

Figure 5.10	Options for Line Straights 181-184 Tower 182,183	89
Figure 5.12	Options for Line Straights 197,203, 203-207, 207-212 Tower 197-201, 203,206-208,210, and 211	91
Figure 5.13	Tower 217	93
Figure 18.1	Distance between the approximate centre line of R183 and Tower 142	299
Figure 19.1	View from St. Patrick's Church looking west	318
Figure 19.2	Aerial photograph of Ardraccon Demesne	320
Figure 19.3	Looking towards Ardraccon House from north (photo location depicted by red dot)	320
Figure 19.4	Map indicating locations of ringforts and enclosures, indicated in orange, in the vicinity of Rafferaigh and Ardragh.	338

LIST OF TABLES

Table 1.1:	Structure of Application Documentation	5
Table 2.1:	Planning Applications Lodged Since May 2015	17
Table 4.1:	Location of Summary of Correspondence with Landowners for each of the Three Phases of Landowner Engagement, as set out in Chapter 7 of Volume 2B.....	50
Table 11.1:	Annual Surveys Of Overseas Holidaymakers To Ireland.....	155
Table 11.2:	Summary of Fáilte Ireland survey "Cultural Product Usage Among Overseas Visitors (July 2014).....	162
Table 12.1:	AA Screening Assessment for specific SPA sites south, east and south east of the development in Ireland.	178
Table 12.1:	Information used to inform estimated collision rates from the project alone and cumulatively with Emlagh Windfarm	197
Table 14.1:	Height of cables above ground level	229
Table 15.1:	EIS Table 9.4: Construction phase noise predictions	232
Table 16.1:	Comparison of designated viewpoint evaluations between CAAS Ltd and the Applicant - Viewpoints located within the study area of 5km (up to 10km for elevated viewpoints)	264

1 INTRODUCTION

1 EirGrid plc (EirGrid) acknowledges receipt of the letter sent by An Bord Pleanála (the 'Board') on the 28th September 2015 in respect of the Strategic Infrastructure Development (SID) application for approval of the proposed North-South 400 kV Interconnection Development (An Bord Pleanála Ref. 02.VA00017).

2 The letter from the Board invited EirGrid to make a submission as follows:

"Having regard to the volume of submissions/observations received by the Board, which have already been forwarded to you, it is considered appropriate to invite you to respond to the issues raised in the submissions/observations including those made by the three planning authorities and prescribed bodies."

3 This document and the appendices thereto, comprise the response of EirGrid and its consultants to the issues raised in submissions and observations received by the Board, including those issues raised by the planning authorities and prescribed bodies.

4 EirGrid reserves its entitlement to further expand on its reply in relation to these issues as may be appropriate, whether at any oral hearing which may held in relation to this application or otherwise.

1.1 OVERVIEW OF STATUTORY CONSULTATION PHASE

5 The application for planning approval for the North-South 400 kV Interconnection Development was submitted to the Board on 9th June 2015. The application documentation was placed on public display during the period 16th June 2015 – 24th August 2015 (i.e. a ten week period) at the offices of An Bord Pleanála, the offices of the three planning authorities (Meath, Cavan and Monaghan County Councils), and also at the Project Information Offices at Navan, Carrickmacross and Cootehill. Additionally, the application documents were available online for viewing / download at a dedicated website (www.eirgridnorthsouthinterconnector.ie).

6 The general public, landowners and other interested parties had until the 24th August 2015 to make submissions / observations on:

- The implications of the proposed development, if carried out, for proper planning and sustainable development in the area or areas concerned; and
- The likely effects on the environment or adverse effects on the integrity of a European site as the case may be, of the proposed development, if carried out.

7 A large number of submissions were submitted to the Board before the end of the statutory consultation period. In addition to the 13 no. submissions by the planning authorities and prescribed bodies), approximately 890 no. submissions / observations were received by the Board from, or on behalf of, individuals, landowners, public representatives, organisations and groups (including schools, community groups and

sporting organisations). This forms the context for the Board's subsequent letter to EirGrid, outlined above.

- 8 EirGrid is cognisant and appreciative of the time spent, and effort made, by all 3rd parties in preparing these submissions and has sought to ensure that every submission has been considered and that the issues raised in those submissions and observations have been addressed.

1.2 REVIEW OF SUBMISSIONS

- 9 A copy of every submission received by the Board has been issued to EirGrid and, for ease of identification and reference, an EirGrid reference number has been ascribed to each. A list of all observers and their EirGrid reference number is provided in **Appendix 1.1** of this report.

- 10 In order to ensure that all of the issues raised in submissions and observations were considered by the relevant specialist / project team member, an initial review process was conducted. This initial review included the identification of the main issues in each submission under a number of key topics relating to various aspects of the proposed development and the contents of the application documentation, for example the environmental topics evaluated in the Environmental Impact Statement (EIS).

- 11 The purpose of the review was to highlight to the relevant specialist / project team member issues relevant to their particular specialism, following which the specialist would review each relevant submission in detail.

- 12 In this manner each submission was subject to review both by the initial reviewers and by relevant specialists.

- 13 It is noted that some observers included copies of the submission / observation they lodged in respect of the 2010 planning application (ABP Reg. VA0006) which was subsequently withdrawn. The issues raised in the 2010 submissions were comprehensively considered by EirGrid during the re-evaluation process (refer to Appendix B, *Final Re-evaluation Report*¹, and Section 3.0 of the *Preferred Project Solution Report*²). Where the same issues have been raised in respect of this current application for approval, these have been addressed in this response. Accordingly, and for the avoidance of doubt, this document responds to issues which have been raised in respect of the 2015 application; however, EirGrid acknowledges that these issues may also have been raised in respect of the previous application submission.

- 14 It is also noted that a number of submissions comprise petitions which multiple parties have signed. The issues raised in these petitions are responded to herein; however, for clarity of the response report they are addressed as a single submission, which is consistent with the manner in which the submission / observation was received by An Bord Pleanála.

¹ The *Final Re-evaluation Report* (April 2013) is included as Appendix 1.2, Volume 3B Appendices of the EIS.

² The *Preferred Project Solution Report* (July 2013) is included as Appendix 1.3, Volume 3B Appendices of the EIS.

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1.3 RESPONSE TO SUBMISSIONS

- 15 It is noted in many instances, submissions raise issues that are addressed in the Planning Report, EIS, Natura Impact Statement (NIS) or other application documentation as submitted to An Bord Pleanála. Accordingly, to avoid significant reiteration of text, EirGrid has only addressed the substance of that particular issue, and has provided references to where the matter is considered in detail in the application documentation.
- 16 In other instances, submissions raise a very specific query, often with reference to particular landholdings, which may not have been expressly addressed in the application documentation. On reviewing all submissions, similar types of specific issues have been grouped under suitable headings in order to provide a comprehensive overall response. In providing responses, reference is made to where relevant matters are considered in the application documentation, and if appropriate, additional response material is provided.
- 17 Where a submission from a prescribed body or from any other observer raises a specific query that is not expressly addressed in the application documentation, nor previously addressed in response material, this is also considered and responded to under the relevant topic.
- 18 It must also be noted that certain submissions / observations included very specific references to the particular circumstances of the person making the submission / observation. In the limited time available since receiving copies of the submissions / observations, and having regard to the request of the Board, EirGrid and its consultants have focused on responding to the issues raised in these submissions. EirGrid will continue to seek to engage with those persons in relation to specific issues which have been raised.
- 19 A number of submissions raise legal arguments. These are addressed throughout this report, as well, in a separate appendix (**Appendix 1.3**).

1.4 STRUCTURE OF REPORT

- 20 **Section 1:** This introduction outlines the requirements of the Board as set out in its letter of 28th September 2015; EirGrid's approach to the review and response to issues raised in submissions / observations; and the structure of the report.
- 21 **Sections 3 - 7:** These sections address the main recurring issues raised in submissions / observations. They generally correspond to material included in Volume 2A, Volume 2B and Volume 3B of the application documentation, specifically: Need (**Section 3**); Consultation and Methodology (**Section 4**); Alternatives (**Section 5**); Construction (**Section 6**); and Transboundary Impacts, Cumulative Impacts and Impact Interactions (**Section 7**).
- 22 **Sections 8 – 19:** These sections address the environmental issues raised in submissions / observations. They generally correspond to material included in Volumes 3C & 3D of the EIS and Volume 5 of the application documentation.
- 23 **Section 20:** This section comprises a summary conclusion.

- 24 At the beginning of each section reference is made to **Appendix 1.2** which provides an overview of the submissions / observations in which particular issues were raised i.e. the approximate number of observers who raised the issue and a list of submission reference numbers (ascribed by EirGrid). Where common themes or sub-categories of issues are identified, the number and breakdown of observers who raised the particular sub-category of issue is also identified.
- 25 It should be noted that this information is intended to given the Board clarity regarding the level and nature of feedback in respect of particular issues. EirGrid has endeavoured to consider issues raised in all submissions / observations. While every effort has been made to be consistent in the identification of the issues, and sub-categories of issues, in each submission, it is acknowledged that the process involved a degree of interpretation and professional judgement on the part of the reviewer and specialist.

1.4.1 References in this Report

- 26 In responding to issues raised in submissions / observations, extensive reference is made to where the matter is addressed in the application documentation. The structure of the application documentation is summarised in **Table 1.1**. Throughout this Response Report references to the application will generally be abbreviated as follows, Section and / or Chapter Reference and what Volume of the application e.g. Section 3.2 of Volume 3B.

Table 1.1: Structure of Application Documentation

Volume		Details
Volume 1	Volume 1A	Statutory Particulars
	Volume 1B	Planning Drawings
Volume 2	Volume 2A	Planning Report Associated Appendices
	Volume 2B	Public and Landowner Consultation Report Associated Appendices
Volume 3	Environmental Impact Statement	
	Volume 3A	Non-Technical Summary
	Volume 3B	Common Chapters (Cavan-Monaghan Study Area (CMSA) and Meath Study Area (MSA)) Associated Appendices Associated Figures
	Volume 3C	Reference Material Cavan-Monaghan Study Area (CMSA) Associated Appendices
	Volume 3D	Associated Figures Meath Study Area (MSA) Associated Appendices Associated Figures
Volume 4		Joint Environmental Report Associated Appendices
Volume 5		Natura Impact Statement

2 STATUTORY PROCESS, PLANNING AND PROPERTY

2.1 STATUTORY PROCESS

2.1.1 Overview

1 Statutory Process was raised as an issue in approximately 92 no. of submissions / observations. These submissions are listed in Table 1 in **Appendix 1.2** of this report.

2 The Statutory Process topic deals with issues relating to the composition of the planning application including: Appropriate Assessment (AA) and the Natura Impact Statement (NIS); Environmental Impact Assessment (EIA) and the Environmental Impact Statement (EIS); Oral Hearing, and statutory consultation. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 2 in **Appendix 1.2** of this report.

2.1.2 Response to General Issues Raised

2.1.3 Statutory Process

3 The Statutory Process topic covers a wide range of issues which generally relate to the planning application, details of which are recorded, and evaluated where appropriate, throughout the application documentation including the EIS (Volume 3).

4 The Planning Report (Volume 2A) presents the land use planning and related issues associated with the proposed development. Chapter 3 of the Planning Report outlines the legislative context for the proposed development including the Strategic Infrastructure Development (SID), EIA and AA processes, Project of Common Interest (PCI) process, pre-application consultation and other application related matters. Chapter 4 of the Planning Report sets out the planning policy context including European Union, national, regional and local planning policy documents.

5 Section 1.2, Chapter 1, Volume 3B sets out the requirement for EIA including European Union legislation (Section 1.2.1) and national legislation (Section 1.2.2) and conclusions on the requirements for an EIA and AA (Section 1.2.3).

6 Section 1.3, Chapter 1, Volume 3B outlines the process involved in the preparation of the EIS; Section 1.4 outlines the structure and content of the EIS which was submitted with the application for planning approval and Section 1.5 describes the difficulties arising during the preparation of the EIS for the proposed development.

7 Chapter 3 'Scoping the EIS' in Volume 3B outlines the background to the proposed development including the previous application for approval (Section 3.2). Details of the EIS scoping and associated consultation are set out in Section 3.3 including details of the pre-application consultation with An Bord Pleanála in respect of the content of the EIS (Section 3.3.2) details regarding consultation with prescribed bodies and other interested parties in respect of the content of the EIS (Section 3.3.3); details of transboundary consultation (Section 3.3.4), details of consultation of the public and public concerned

(Section 3.3.5) and landowner consultation (Section 3.3.6) in respect of the content of the EIS. Section 3.4 outlines the findings of the informal scoping and consultation process and Section 3.5 provides details on An Bord Pleanála's formal Scoping Opinion.

2.1.4 EIA and EIS

- 8 A number of submissions raised issues regarding the adequacy of the EIA and EIS including limited access to land to carry out surveys and differences in the approach to EIA in the EirGrid EIS, and the separate SONI Environmental Statement (ES) – relating to that portion of the overall proposed interconnector within Northern Ireland. Other submissions questioned the compliance of the EIS with relevant legislation and guidelines due to limited consideration of particular issues.

Applicant's Response:

- 9 Whilst the terms EIA and EIS are often used interchangeably, it should be understood that EIA is an ongoing, iterative and participative processes of assessment undertaken by the competent authority (in this case An Bord Pleanála) whilst an EIS is a document prepared by the developer (in this case EirGrid), and submitted to the competent authority, which informs the EIA carried out by the competent authority. Furthermore, submissions and observations made to An Bord Pleanála by all other parties in respect of the proposed development will also form part of the EIA process conducted as part of the Board's decision-making process on the application for approval.

- 10 As set out in Section 1.3, Volume 3B the multi-volume EIS submitted with the application for approval was prepared having regard to:

- The requirements of Directive 2011/92/EU and specifically Annex IV which sets out the information which should be contained in an EIS (as well as the requirements of article 94 of the *Planning and Development Regulations 2001* (as amended) or 'PDR, 2001 (as amended)' which prescribes the content of an EIS by reference to Schedule 6 of the Regulations);
- A Scoping Opinion on the information to be contained in the EIS, prepared by An Bord Pleanála (see Section 1.3.2, Volume 3B and Appendix 1.4, Volume 3B Appendices);
- European Commission guidelines (see Section 1.2.2, Volume 3B);
- Guidelines on the information to be contained in an EIS and advice notes on current practice in the preparation of an EIS, prepared by the EPA; and
- The experience of EirGrid and the project team in relation to transmission and other electricity development projects, and the preparation of applications for statutory consent for same, including preparation of EISs.

- 11 The issues raised in submissions / observations are addressed in the sections below.

2.1.4.1 Limited Access to Lands to Survey

- 12 A number of submissions raised the issue of limited access to land by the project team to carry out surveys. Specifically, the submissions query the adequacy of the EIS given the limited nature of surveys carried out.

Applicant's Response:

- 13 Section 1.5, Chapter 1, Volume 3B outlines the difficulties arising during preparation of the EIS as required by the EIA Directive and Irish regulations. The EIS recognises that restricted access to private lands was the principal difficulty encountered during the preparation of the EIS. Land access difficulties were experienced notwithstanding a proactive landowner engagement strategy (refer to Volume 2B - *Public and Landowner Consultation Report*). In this regard Section 1.5.1, Volume 3B states *"in many instances, access was denied by landowners or occupiers to personnel attempting to conduct technical or environmental survey work associated with the proposed development, including the preparation of the EIS"* (para. 80). It is further stated at para. 80 *"the result was that the final proposed alignment was designed, and environmental and technical appraisals had to be undertaken, without the entire line route being walked-over or physically accessed by environmental consultants."*
- 14 However, despite the difficulties encountered from refusal of access to lands, EirGrid personnel and its technical and environmental consultants were granted access to a considerable number of identified landholdings along, and adjacent to, the proposed alignment, which enabled both direct and vantage point environmental surveys to be undertaken. In addition to this, Light Detection and Ranging (LiDAR) surveys (see Section 1.5.3 Volume 3B), aerial surveys and a suite of detailed desk top appraisals were undertaken and completed for the entire route.
- 15 By way of example, as explained in Chapter 3 (Human Beings-Land Use) of Volumes 3C & 3D, it is the case that there is considerable homogeneity of land type along the alignment of the proposed development. Reference to CORINE Land Cover mapping, which is an established authoritative data source for land type in Ireland, confirms that approximately 99% of the proposed alignment is classified as agricultural (in particular improved grassland), which is inherently robust from an environmental perspective. As addressed in the *Preferred Project Solution Report*, (comprising Appendix 1.3, Volume 3B Appendices), structures have been specifically located within areas of improved grassland where land access has not been possible or sufficient to eliminate, at this stage, the potential for significant impact upon a more ecologically sensitive land type or feature, for example hedgerows. This approach has ensured that the proposed alignment is located within a receiving environment of relatively low sensitivity. In addition, the attention and expertise given to the specific routing of the proposal undertaken by experienced professionals has ensured the identification and avoidance of more sensitive ecological and other environmental receptors within the receiving environment (i.e., mitigation by avoidance).
- 16 Having regard to these factors, and to other measures addressed below, notwithstanding the absence of access to lands in many instances, a robust appraisal of the likely significant environmental impacts associated with the proposed development has been carried out.
- 17 Important considerations and alternative means of obtaining baseline data in this regard include:
- **The nature and scale of the proposed development.** The physical footprint of an overhead line (OHL) development (i.e., tower locations) is small.
 - **Desk-based assessments of existing published data sources.** Comprehensive and detailed published data sources are available, and in this instance (and indeed in

respect of all transmission infrastructure development projects), were used to inform the baseline description and quantitative and qualitative impact appraisals.

- **Detailed analysis of high quality OSI aerial photography and LiDAR orthophotography along the entire proposed line route.** The aerial photography and LiDAR orthophotography used is of an extremely high quality and definition, providing clear images of the landscape below, thereby facilitating identification of features on the ground. A detailed description of the use of LiDAR is provided in Section 1.5.3, Volume 3B.
- **Walkover surveys and visual surveys (from public roadways and / or adjacent lands) along the proposed line route.** There is an extensive network of public roads throughout the study area, including in proximity to the alignment of the proposed development which allowed for extensive visual surveys to be conducted along the OHL route. In addition, where access was granted to landholdings along the alignment, it was possible to carry out a visual survey of adjoining landholdings where such access had not been granted. Given the low value (from an ecological and environmental perspective) of the improved grassland habitats in which the vast majority of towers are located (see Chapters 3 of Volumes 3C & 3D), surveys of the lands which were accessed enabled the accuracy of the desktop evaluation undertaken in respect of the proposed development to be confirmed.
- **The findings of ongoing ecological studies, including those undertaken over an extended period of time.** Very extensive winter bird, breeding bird and bat surveys have been undertaken over a number of seasons (refer to Chapters 6 of Volumes 3C & 3D). For example, wintering bird surveys have been undertaken every season between 2007 and 2014. These have produced a very significant body of information to inform the ecological evaluations, and to ensure that appropriate mitigation measures can be applied to avoid or, at the very least, minimise potential environmental impact upon sensitive ecological receptors.
- **Avoidance of areas of potential ecological significance.** As outlined above, it has been a guiding principle for the line design of the proposed development to seek to avoid any significant impact on sites of known ecological importance. In the case of sites of potential ecological importance, site surveys and appraisals have been carried out where possible to determine the presence of, and nature of, ecological features and species.

18 Having regard to the above, it is considered by EirGrid and its project team that its approach to (a) the routing of the alignment – avoiding key sensitive receptors, (b) the siting of the proposed structures, (c) the construction methodology that will be employed, and (d) the range of alternative and complementary tools and measures to gather the necessary information regarding the baseline receiving environment (in particular including the use of aerial photography, LiDAR imagery, vantage point survey, and extended ecological survey, as well as direct site access where possible, and vantage survey), has ensured that an adequate and robust EIS has been prepared in respect of the proposed development.

19 Section 1.5.5, Volume 3B outlines the conclusions regarding limited access to lands. It is stated at para. 97 *“despite the difficulties encountered in compiling this EIS (including the inability to access the entire extent of the alignment of the proposed development), EirGrid and its project team are satisfied that a comprehensive and objective EIS has been prepared in respect of the proposed development, which is more than adequate to meet the requirement that it alerts the competent authority, the public and public concerned and*

prescribed authorities to the potential effects of the proposed development on the environment." In short, this EIS will fully enable An Bord Pleanála to carry out its EIA of the proposed development.

- 20 For additional responses in relation to the potential impact arising from the limited access to land to carry out surveys from an ecological perspective, see **Section 12.2.1** and **Section 12.3.1.9** of this report.

2.1.4.2 Pre-construction Surveys

- 21 Some observers raised the suggestion of the project having to rely on post-consent or pre-construction studies / surveys to overcome the lack of access to land to undertake surveys in preparing the EIS.

Applicant's Response:

- 22 Section 1.5, Chapter 1 of Volume 3B outlines difficulties arising during preparation of the EIS as required by the EIA directive and Irish regulations. It also documents the alternative methods to ensure that an adequate evaluation was undertaken (as detailed in **Section 2.1.2.2** of this report).
- 23 There is no question of the project placing any reliance on post-consent studies / surveys; rather pre-construction verification survey is a normal and responsible element of the overall construction process, to identify hitherto unforeseen constraints. Constraints can emerge in the period between the preparation of the EIS and the pre-construction phase, such that they would only be encountered during the intended pre-construction verification survey. There are no adverse implications for proper planning and sustainable development or absence of proper assessment.

2.1.4.3 SONI ES

- 24 Some observers have undertaken a comparison of the EirGrid EIS and SONI Consolidated ES Addendum (2015) and identified what they consider to be deficiencies in the EIS, mainly the comparative level of access to lands to enable walk over surveys to be carried out. Other issues relate to what are perceived to be, materially different approaches to identifying and assessing potential impacts.

Applicant's Response:

- 25 In response, it is submitted that EirGrid and SONI and their consultants have closely coordinated their activities to ensure an integrated approach has been undertaken to the design of the proposed interconnector and to the appraisal of its potential environmental impacts.
- 26 It is acknowledged that:
- Since the introduction of the original Environmental Impact Assessment Directive (Directive 85/337/EEC), there has been considerable development in the impact assessment methodologies in each Member State. When adopted, the response of Member States was uneven and, in some cases, infraction proceedings resulted. Some of these difficulties which arose in implementing the requirements of the EIA Directive were the results of differing legal traditions within different Member States, differing

interpretations in case law, whilst others arise from the use of guidelines prepared by individual Member States. These considerations mean that some of the terms used and some of the ways of presenting information are different between Member States. Furthermore, there is considerable scope for variations on a project-by-project basis for how some topics are covered. This is especially the case responding to specific requirements of different advisory / prescribed bodies within jurisdictions.

- In relation to site access, the granting of access for the SONI section of the 400 kV OHL is greater than for the section of the proposed development in Ireland. This does not have a material impact on the EIS as a precautionary approach has been taken in the siting, assessment and mitigation measures proposed in respect of North-South 400 kV Interconnection Development.

27 In short, any difference in approach to preparation of the EIS submitted with this application, and the ES submitted with the separate SONI application in Northern Ireland, does not result in any deficiency in this EIS, nor the application as a whole. For additional responses in relation to the potential impact arising from the lack of access to land to carry out surveys in relation to ecology see **Section 11.2.1** and **Section 11.3.1.9** of this report.

2.1.4.4 Purported Omission of Material

28 Some submissions raised issues regarding the compliance of the EIS with relevant legislation and guidelines due to an absence of consideration of particular issues. These are considered below.

Applicant's Response:

29 **Mines:** A few observers consider that the EIS provided no or inadequate information of the potential impact of the proposed North-South 400 kV Interconnection Development on mines. However, the impacts on historical mines and mineral resources are addressed in Chapter 7, Volumes 3C & 3D. For additional response material in respect of this particular issue, see **Section 13.2.1** of this report.

30 **Protected Species:** Some observers consider that the EIS fails to adequately address species protected under European Union (EU) legislation. In response, the impacts on Protected Species are addressed in Chapter 6, Volumes 3C & 3D. In addition, **Section 12.2.2** (Potential Impact on Protected Areas), **Section 12.2.3** (Potential Impact on Protected Species) and **Section 12.2.5** (Potential Impact on Birds) of this report provide a detailed response in relation to this particular issue.

31 **Bats:** A few submissions / observations stated that the EIS gave no or inadequate consideration of the potential impact of the proposed development on bats. In response, the impacts on Protected Species are addressed in Chapter 6, Volumes 3C & 3D, in addition, **Section 12.2.3** (Potential Impact on Protected Species) and **Section 12.3.4.4** (Survey of Bats) and other responses set out under **Section 12.4** (Response to Specific (Ecology) Issues Raised in Observer Submission), of this report provide a detailed response in relation to this particular issue.

2.1.4.5 Alleged Project Splitting (EIA)

32 Some submissions raised the issue of project splitting. This was raised in the context of wind farm developments, other transmission developments and a possible future substation in the vicinity of Kingscourt.

Applicant's Response:

33 Insofar as this application describes the contribution of the project to sustainable development through improved connection of renewable energy sources such as wind farms, it has been suggested in the submissions that this constitutes project splitting. However, this is to misunderstand the concept of project splitting which is to prevent the EIA Directive from being circumvented by the splitting of projects.

34 This proposed development, and separately, any wind farms, are clearly distinct projects for the purposes of the EIA Directive. The proposed development and any wind farms are functionally interdependent and are not an integral part of the same development. However, in appropriate instances, cumulative impacts relating to wind farms are assessed in the EIS in connection with the project. In a similar manner, the potential cumulative impacts of a possible future substation in the vicinity of Kingscourt are also addressed in Section 10.6.1.1, Chapter 10, Volume 3B of the EIS.

2.1.5 Appropriate Assessment and Natura Impact Statement

35 A small number of submissions raise concerns regarding the adequacy of the Appropriate Assessment (AA) and the Natura Impact Statement (NIS) in respect of the proposed development.

Applicant's Response:

36 Again, AA is an ongoing, iterative and participative process undertaken by the competent authority (in this case An Bord Pleanála), whilst an NIS is a document prepared by the developer, and submitted to the competent authority, which informs the AA process carried out by the competent authority. Submissions and observations made to An Bord Pleanála by all other parties in respect of the proposed development will also form part of the relevant stages of the AA conducted by the Board's in making its decision on the application for approval.

37 In accordance with the requirements of EU and Irish law, and in order to provide information to facilitate the Board in carrying out the necessary stages of the AA process, the application documentation included a NIS (refer to Volume 5).

2.1.6 Strategic Environmental Assessment

38 A number of submissions claim that the statutory process for the proposed development is flawed owing to deficiencies at Strategic Environmental Assessment (SEA) level. In particular a number of submissions question the validity of the planning application based on the following reasons:

- The planning application was not subject to SEA;
- Grid25 was not subject to SEA;

- A project which is funded under and part of the *National Renewables Energy Plan* (NREAP) requires a valid SEA to make a planning application; and
- A SEA should have been carried out on the NREAP.

Applicant's Response:

39 An SEA is not required in respect of the North-South 400 kV Interconnection Project, the subject matter of the application for approval. In particular an SEA is not required in respect of a project but in respect of plans or programmes. Article 2 of Directive 2001/42/EC *on the assessment of the effects of certain plans and programmes on the environment* [the SEA Directive] defines “plans and programmes” as:

“plans and programmes... which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government, and which are required by legislative, regulatory or administrative provisions.”

40 Article 3(2)(a) requires that an environmental assessment shall be carried out for all plans and programmes:

“...which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, town and country planning or land use and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC.”

41 The proposed development is a “project” for the purposes of the EIA Directive, for which and EIS is required to be carried out. In this respect, Article 1(2) of the EIA Directive states:

“For the purposes of this Directive 'project' means:
-the execution of construction works or of other installations or schemes,
-other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources”.

42 In any event insofar as the proposed development forms part of EirGrid’s Grid25 development strategy, an SEA of the Grid25 Implementation Programme was conducted which involved public participation including the opportunity for the public to make submissions. Both the Grid25 Implementation Programme and the related SEA expressly refers to the North-South 400 kV Interconnection Development (refer to **Figure 2.1** and **Figure 2.2**). Thus an SEA of the plan or programme which incorporates the project has been carried out and any objection to the proposed development on the basis of purported non-compliance with the SEA Directive is without merit.

43 Insofar as certain submissions seek to impugn the validity of the SEA carried out with the Grid25 Implementation Programme or any aspect of such SEA, the current application is not the appropriate forum in which to do so. This would amount to a collateral challenge to that SEA process. Moreover, the Grid25 Implementation Programme (IP) was published in May 2012 and the time to challenge any such SEA process has long expired.

44 Finally insofar as the EirGrid is a public authority which conducted the SEA, that process is entitled to a presumption of validity.

8.8 Interconnection				
	Likely to Improve status of SEOs	Probable Conflict with status of SEOs- unlikely to be mitigated	Potential Conflict with status of SEOs- unlikely to be mitigated	No Likely interaction with status of SEOs
<p>1. EirGrid is currently developing the 500MW East-West Interconnector between Ireland and Wales. This has a scheduled completion date of 2012. It is therefore assumed that the island of Ireland will have, as a minimum, some 900MW of interconnection with the United Kingdom.</p>	<p>Direct interaction C1</p> <p>By removing the need to develop an extent of power generation capacity</p>	<p>Unavoidable effects on the landscape</p>	<p>Direct interaction B1 B2 B3 CH1 HH1 W1 W2 MS1</p> <p>Indirectly, by facilitating the development of renewable energy infrastructure, which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans</p>	
<p>2. EirGrid and Northern Ireland Electricity (NIE) are currently progressing the planning of a second major interconnector between the Republic of Ireland and Northern Ireland.</p>	<p>B1 B2 B3 L1 CH1 HH1 W1 W2 MS1</p>			

Figure 2.1: Extract from Grid25 IP, Environmental Report (page 97)

<p>Border Region 3⁰⁰:</p> <p>Additional Interconnector</p> <p>The planned additional major interconnector between the Republic and Northern Ireland is required to improve competition by reducing transmission constraints that are currently restricting the efficient performance of the all-island Single Electricity Market, to support the development of generation from renewable energy sources, and to improve security of supply on the island.</p>	<p>Direct interaction C1</p> <p>By allowing the importing of power while renewable generation is low, interconnectors would remove the need to develop an extent of power generation capacity;</p> <p>B1 B2 B3 L1 CH1 HH1 W1 W2 MS1</p>	<p>L1</p>	<p>Direct interaction B1 B2 B3 CH1 HH1 W1 W2 MS1</p> <p>Indirectly, by facilitating the development of renewable energy infrastructure which are provided for by land use planning policies including those from the NSS, NDP and lower tier Regional and County Plans</p> <p>B1 B2 B3 CH1 HH1 W1 W2 MS1</p>	
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Figure 2.2: Extract from Grid25 IP, Environmental Report (page 105)

45 Furthermore, the NREAP is a document related to national renewable energy; EirGrid has no comment on this particular issue, given that preparation and implementation of the NREAP is not the responsibility of EirGrid. We would simply express our consideration that submission of this application for approval is not in any way dependent on the need or otherwise for SEA of the NREAP.

2.1.7 Application for Planning Approval

46 A number of submissions / observations raised issues in relation to the application for planning approval, including criticism of the complexity of the application including the number of documents and maps on the CDs (which were difficult to navigate), the cost of the application, etc. Other submissions considered material to be absent.

Applicant's Response:

47 The size of the application is reflective of the nature and scale of the proposal and fact that the project history goes back to before 2007. The application also included various reports and studies undertaken which are referred to and / or have informed the content of the application.

48 Notwithstanding such level of detail, the application includes a Non-Technical Summary (NTS) of the EIS, while the Planning Report presents the proposal, its evolution, and other matters with as little complexity as possible.

49 It should be noted that the planning application was, and remains, available to view in the Project Information Centres, and EirGrid personnel were available to provide assistance to interested parties in respect of any aspect of the proposed application documentation and to answer queries in relation to the proposed development. Further responses in relation to the communication strategy following submission of the planning application for approval are included in **Section 4.1** of this report.

50 One submission noted that the application failed to include the 'Schedule 5 Consultation Record' with Volume 1A of the application documentation. The Consultation Record was indeed submitted with the application for approval and was included as Volume 1A Schedule 5.

2.1.7.1 Compliance with Article 22 of the Planning and Development Regulations 2001 (as amended)

51 One submission considers the application to be invalid with reference to non-compliance with Articles 22 and 23 of the *Planning and Development Regulations, 2001* (as amended) including *inter alia* that the written consent of landowners was not been submitted with the application.

Applicant's Response:

52 The North-South 400 kV Interconnection application for planning approval falls under the provisions of the *Planning and Development Acts 2000* (as amended) and specifically sections 182A, 182B and 182E inserted by the *Planning and Development (Strategic Infrastructure) Act 2006*, which relate to the provision of electricity transmission development.

53 In keeping with the "General Guidance Note" at the end of the SID application form, the range and format of material required to be submitted with the application and in particular the planning drawings, where practicable, generally accords with the requirements for a planning application as set out in the *Planning and Development Regulations 2001* (as amended).

54 However, Chapter 1 of Part 4 of the Planning and Development Regulations 2001, as substituted and amended, (i.e., “the permission regulations”) makes provision for the content of a planning application, and a standard application form has been introduced under those Regulations. Specifically, article 22 of the permission regulations, as amended, provides as follows:

(1) A planning application under section 34 of the Act shall be in the form set out at Form No. 2 of Schedule 3, or a form substantially to the like effect.

*(2) A planning application referred to in sub-article (1) shall be accompanied by –
[...]*

(g) where the applicant is not the legal owner of the land or structure concerned, the written consent of the owner to make the application...[Emphasis added]

55 Accordingly, it is self-evident that the provisions of sub-article 22(2)(g) in relation to the written consent of an owner of land to make the application applies only to “a planning application made under section 34”. This application is made for approval under section 182A. In such circumstances, the contention that article 22 applies or that the failure to submit a letter of consent invalidates the application for approval is manifestly incorrect.

56 Insofar as it is also contended that Article 23 of the 2001 Regulations has not been complied with, once again it may be noted that the requirements of article 23, in relation to “plans, drawings and maps”, are expressly stated to relate to “a planning application in accordance with article 22”. As set out above, a planning application in accordance with article 22 is “a planning application made under section 34” to a planning authority and not an application for approval made directly to the Board under section 182A. Accordingly, contrary to the submission, there is no requirement to comply with the provisions of articles 22 and 23 of the 2001 Regulations.

2.1.7.2 Accuracy of Planning Drawings and List of Extant Permissions

57 A number of submissions identify new or proposed dwellings or farm buildings which it has been suggested are not identified on the planning drawings. Other submissions consider the list of extant permissions, as set out in Table 2.1 of Volume 2A and as represented on the Planning Drawings (Volume 1B), to be incomplete.

Applicant's Response

58 The application for approval drawings identify all dwellings and extant permissions within 200 metres of the proposed development (measured from the centreline). Information in relation to extant permissions was sourced from the planning application register and planning application files of the respective Planning Authorities.

59 A number of submissions raise the fact that a large 32,000 laying hen unit (which was granted permission on 14/12/2010 and subsequently constructed in 2011), is not identified on the planning drawings (1:2,500). It is accepted that this agricultural development was not noted on the application drawings. In this regard, only the details of new dwelling houses constructed or granted planning permission within 200m of the proposed development were added to the planning application drawings. However, this development was fully considered in the design and routing of the proposed OHL, and is

comprehensively assessed in the EIS. Refer to **Section 10.4.3** which provides a detailed response to this particular matter.

- 60 As set out in Section 2.2.2 of Volume 2A, planning applications within approximately 200m of the proposed development are monitored on a regular basis with the aim of ensuring conflicts do not arise. As at the end of March 2015, no planning applications had been submitted or were awaiting decision from Monaghan, Cavan or Meath County Council within approximately 200m of the proposed development.
- 61 As a result of on-going monitoring a number of planning applications have been submitted to the respective planning authority since May 2015. These are set out in **Table 2.1**.

Table 2.1: Planning Applications Lodged Since May 2015

County	Townland	Register Reference and Brief Description of Development	Decision Date / Decision Due Date	Approx. Distance to North-South 400 kV (measured from centre line)
Monaghan	Crinkill	15317 - Retain a loose bedded cattle shed and all associated site work	Conditional 8/10/15	153m
Meath	Teltown	KA150378 - Development will consist of a two storey type dwelling house with an attached domestic garage, the installation of a proprietary waste water treatment unit and percolation area and a bored well together with all associated site works. The planning application is accompanied with a Statement of Screening for Appropriate Assessment and a Natura Impact Statement (NIS)	Further Info Requested 08/06/2015	97m
Meath	Branganstown	TA150776 - the development will consist of the construction of a new single storey extension to the front of the existing dwelling and all associated site works	Further Info Requested 07/09/15	130m
Meath	Crumpstown or Marshalstown	TA150953 - the development will consist of the construction of an extension to the rear and side of the existing dwelling house, the construction of a new percolation area and shed to the rear of the existing house, the widening of the existing vehicle entrance gate and other associated site works	05/11/2015	130m

- 62 Other submissions suggest that certain maps submitted with the application are flawed as they have been measured from the conductor to the nearest point of the existing residential properties, whereas they should have been measured from the conductor to outer curtilage of properties or boundaries of private open space.
- 63 However, in context of considering residential amenity, it is standard practice to measure distances from the boundary of a proposed development to the nearest point of an existing building façade. This is reflected in policies and development management standards relating to amenity in respect of the following issues: aspect, privacy, sunlight and daylight.
- 64 Furthermore, as set out in Section 5.4.2.1 of Volume 3B, in respect to individual houses, EirGrid will seek to maximise distances between OHL and existing dwellings and specifically, where possible, to achieve a lateral clearance of at least 50 metres from the centreline of the proposed development to the nearest point of dwellings.

2.1.7.3 Oral Hearing

- 65 A number of submissions request the Board to hold an Oral Hearing.

Applicant's Response:

- 66 The Applicant notes that the Board has an absolute discretion as to whether to convene an oral hearing on the application for approval submitted in relation to the proposed North-South 400 kV Interconnection Development.

2.1.8 Statutory Consultation Process

- 67 A number of submissions raise issues regarding the statutory consultation process in respect of the application for approval of the proposed development which focuses on what they considered to be non-compliance with legislation. In this context, Article 6(4) and Article 7 of the Aarhus Convention, Maastricht Recommendations, Strategic Environmental Assessment Directive and the Gunning Principles were cited. A comprehensive response to these particular issues is provided in **Section 4.2.1.6** (Compliance with Legislation and Guidance Principles) of this report. Separate to this, below we consider the statutory consultation requirements from the perspective of the *Planning and Development Act, 2000* (as amended).

Applicant's Response:

- 68 As detailed in Section 3.5 of the Planning Report (Volume 2A), in accordance with Section 182E of the *Planning and Development Act 2000* (the '2000 Act') (as amended) EirGrid engaged in consultation with the Board prior to submitting the application. A list of the dates of the statutory pre-application consultations with An Bord Pleanála, together with the applicant's summary of the key issues discussed at those meetings, is set out in Table 3.1 of Volume 2A. Information provided by the Board during the course of these discussions in respect of the pre-application consultations held in respect of the previous application for approval also informed the EIS. Chapter 3 of Volume 3B (including Tables 3.1 and 3.4) separately outlines the requirements for consultation undertaken and relevant to the EIA process prior to submission of the application for planning approval to the Board.

- 69 Section 182A(4)(b) of the 2000 Act (as amended) requires that before making an application for strategic transmission infrastructure development, the applicant must also send the application documentation to the relevant local authorities and certain prescribed authorities. Accordingly, additional consultation was held with prescribed bodies (including Monaghan, Cavan and Meath County Councils). These were sent a copy of the application documentation and were specifically notified that submissions or observations may be made to the Board. In addition, meetings (both formal and informal) were held with many parties, including officials of the three relevant local authorities. Details of these consultations are included in Schedule 5 of the Planning Application Form (refer to Volume 1A of the application) and Section 3.3 and Tables 3.2 and 3.3 of Chapter 3 of Volume 3B of the EIS.
- 70 Section 3.2.1 of Volume 3B also confirms that all consultation during the previous application for approval (including submissions made by prescribed authorities and other interested parties prior to and during the oral hearing) has inputted into the process which culminated in the production of the EIS for the proposed development.
- 71 It is also noted that EirGrid consulted with the Department of Environment Northern Ireland (DOENI) with regard to the information to be contained in the EIS. Issues raised were consistent with those identified in its response to the Board's scoping request.
- 72 The extent and nature of public consultation and participation in relation to all stages of the proposed development since 2007 is described in a separate *Public and Landowner Consultation Report* (Volume 2B). This report sets out the objectives of the general consultation strategy, its structure, details of all consultation and engagement activities, feedback received and how such feedback was responded to.

2.1.9 Project of Common Interest

- 73 A number of submissions raise concerns regarding the dual role of An Bord Pleanála in Strategic Infrastructure and Projects of Common Interest.

Applicant's Response:

- 74 In its role as Competent Authority, the Board published a *Project of Common Interest Manual of Permit Granting Process Procedures* in May 2014, subsequently amended in September 2014. This manual provides clarity on the dual role of An Bord Pleanála in respect of projects that are designated a PCI under Regulation No. 347/2013 and those that are also Strategic Infrastructure Development under the provisions of the *Planning and Development Acts 2000 to 2014*. It sets out:

“An Bord Pleanála's role under the Collaborative Scheme is such that An Bord Pleanála as a consent granting body in its own right feeds into the PCI process as do the other authorities concerned. With a PCI project which is also a Strategic Infrastructure project, it may assist in thinking of An Bord Pleanála as having two roles: one role as a decision making body in the planning sphere and another role as Competent Authority in the PCI process. Neither role will impinge on the other and the separate administrative unit will maintain this division of function.” (p. 7) [Emphasis added]

2.1.10 Costs of Participation in the Planning Process

75 Certain submissions raise issues concerning the costs of participation in the planning process and the costs relating to the previously withdrawn EirGrid application for the development. The costs of participation in the planning process including relating to a withdrawn application, is a matter prescribed and/or regulated by the Planning Act and Planning Regulations.

76 Insofar as An Bord Pleanála has any discretion concerning issues of costs it may be noted that the jurisdiction of the Board to award costs in relation to applications for approval of electricity transmission development is limited. Subsection 182B(5A)(c) sets out the jurisdiction of the Board to *“state the sum to be paid and direct the payment of the sum to... any other person as a contribution to the costs incurred by that person during the course of consideration of that application (each of which the sums the Board may, by virtue of this subsection, require to be paid).”* Moreover, subsection 182B(5B) provides that:

“A reference to costs in subsection (5A)(c) shall be construed as a reference to such costs as the Board in its absolute discretion considers to be reasonable costs, but does not include a reference to so much of the costs there referred to as have been recovered by the Board by way of a fee charged under section 144.”

77 Thus, the Board had jurisdiction to direct the payment of such costs as the Board *“in its absolute discretion considers to be reasonable costs”*. In this respect, the Board's absolute discretion was exercised on the withdrawal of the previous application for approval.

2.2 PLANNING

2.2.1 Overview

78 Planning Issues were raised as an issue in approximately 142 no. of submissions / observations. These submissions are listed in Table 3 in **Appendix 1.2** of this report.

79 There are a number of recurring issues raised in the submissions / observations received by the Board in relation to planning. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 4 in **Appendix 1.2**.

2.2.2 Response to General Issues Raised

2.2.3 Potential to Impact Future Planning Applications

80 A recurring theme in submissions / observations is the potential for the proposed development to impact or sterilise future development sites. Landowners and other residents of the area have expressed concerns that, in the event approval is granted and the North-South 400 kV Interconnection Development is built, the existence of the OHL will subsequently prevent landowners or members of their family from obtaining planning permission for new dwellings. Farmers are also concerned that the existence of the OHL will prevent or restrict agricultural development.

Applicant's Response:

- 81 From the viewpoint of proper planning and sustainable development, the proposed development does not result in the sterilisation of potential development sites or existing properties because:
- Unlike underground cables, there is no statutory restriction relating to development in the vicinity of overhead transmission lines; and
 - The only regulatory requirement is for prospective applicants to inform ESB/ESB if they propose to build within 25 yards (23m) of OHL;
- 82 Individual planning applications for new dwellings or farm developments (where planning permission is required) will be assessed by the relevant planning authority (and by the Board in the event of an appeal) on their merits in accordance with the proper planning and sustainable development of the area.
- 83 There are no policies or objectives in the Meath, Cavan or Monaghan County Development Plans which prohibit development in the vicinity of overhead transmission lines, which thereby would directly result in sterilisation of lands.
- 84 Finally, as set out in Section 2.2 of Volume 2A, planning applications (and any permission granted on foot of such applications) for residential development along or in the vicinity of existing or proposed OHLs are not uncommon. EirGrid is of the view that any conflicts that may arise in the future in relation to such proposed developments can be resolved without prejudice to the rights of owners and occupiers of land, by virtue of the ESB policy with respect to loss of development which is contained within the *ESB / IFA Code of Practice for Survey, Construction & Maintenance of Overhead Lines in Relation to the Rights of Landowners* (1985).
- 85 For additional responses in relation to the Potential Impact on the Future Development of the Farm, see **Section 10.2.4** of this report.

2.2.4 Consideration of SID Applications and the County Development Plans

- 86 A number of submissions raise issues in relation to a perception that, in considering applications in respect of this proposed Strategic Infrastructure Development (SID), the Board may disregard, conflict and / or materially contravene the policies, development management standards and guidelines of the Monaghan, Cavan and Meath County development plans. It has been suggested that applications for residential dwellings are expected to comply with stringent design requirements but that the proposed North-South 400 kV Interconnection Development is not.

Applicant's Response:

- 87 The North-South 400 kV Interconnection Development is a Strategic Infrastructure Development (SID), meaning that the application for statutory approval was required to be made directly to the Board under section 182A of the 2000 Act. However, before making a decision in respect of the proposed electricity transmission development, the Board is required by the provisions of subsection 182B(1) to consider the EIS, NIS, submissions or observations made relating to, *inter alia*, the "*likely consequences for proper planning and sustainable development in the area in which it is proposed to situate the proposed development*" and "*the likely effects on the environment or adverse effects on the integrity*

of a European site of the proposed development". Moreover, in considering information furnished relating to the likely consequences for proper planning and sustainable development of the proposed development in the area in which it is proposed to situate such development, subsection 182B(10) requires the Board to have regard to, *inter alia*, "the provisions of the development plan for the area". The Board is also required to have regard to Government policies, the national interest and issues of strategic economic or social importance to the State.

88 The Board will therefore have regard to the policies and objectives of all the relevant local development plans. The only difference is that the restrictions in section 37(2)(b) of the 2000 Act relating to material contravention of a statutory plan, do not apply in the case of strategic infrastructure development.

89 Furthermore, the proposed development has been informed by the objectives and policies of the Monaghan, Cavan and Meath County development plans and the relevant policies of the Government and Ministers. Relevant sections of the application documentation, including the EIS, consider the policies and objectives of the Monaghan, Cavan and Meath County Development Plans and contain an evaluation of those policies and objectives in context of the proposed North-South Interconnection Development.

2.2.5 Planning Precedent – Cregg Windfarm

90 Some submissions cite the fact of, and reasons for refusing permission in respect of the Cregg Windfarm development as relevant to the consideration of the proposed North-South 400 kV Interconnection Development application for approval. These submissions note that the alignment of the proposed North-South Interconnection Development is closer to Whitewood House (a designated demesne) than the proposed Cregg Windfarm and that Cregg Windfarm was refused on the grounds that it significantly impacted on the demesne of Whitewood House.

Applicant's Response:

91 As is clearly evident from the Board's decision, the impact on Whitewood House was one of a number of issues considered in respect of the proposed windfarm. Such issues also included the height and layout of the turbines, failure to demonstrate adequate consideration of alternatives, and contravention of a specific development policy objective:

"Having regard to the Wind Energy Development Guidelines, Guidelines for Planning Authorities issued by the Department of the Environment, Heritage and Local Government, June 2006, to the policies and objectives set out in the current Meath County Development Plan including the provisions in relation to designed landscapes, historic parks, gardens and demesnes (Section 9.6.13), to the height and spatial layout of the proposed six number wind turbines, to the potential for the wind turbines to unduly interfere with views from Whitewood House, a protected structure in the Meath County Development Plan (MH005-104), and to the failure to demonstrate adequate consideration of alternatives, it is considered that the development as proposed would be contrary to CH OBJ 22 of the County Meath Development Plan which seeks "to discourage development that would lead to a loss of, or cause damage to, the character, the principle components of, or the setting of historic parks, gardens and demesnes of heritage significance". The proposed

development would, therefore, be contrary to the proper planning and sustainable development of the area was refused". (An Bord Pleanála Ref No. PL 17.244357)

- 92 Furthermore, we also note that that previously proposed windfarm (comprising 150m high turbines located at 2.5km distance) was directly in line with the entrance avenue of Whitewood House, and all 6 turbines are located within an area of approximately 1.5km. In comparison, the linear overhead line alignment, with significantly smaller structures than those previously proposed turbines of the wind farm, occurs to the rear (west) of the house; while nearer (1.6km), there is a significant amount of screen vegetation located between the existing house and the proposed overhead line, with only a narrow corridor of visibility towards the proposed development from Whitewood House.
- 93 The proposed North-South 400 kV Interconnection Development, including a significant consideration of technology and alignment alternatives, is considered to be entirely in accordance with governing policy, and the proper planning and sustainable development of the area.
- 94 On the basis of all this, it is submitted that there is little if any meaningful comparison between that proposed windfarm and this proposed strategic transmission infrastructure development.

2.2.6 Planning Conditions

- 95 The planning reports submitted by Monaghan, Cavan and Meath County Council include recommendations in respect of a range of planning conditions. The three planning authorities specifically recommend general development contributions, community gain conditions, special development contribution scheme conditions, and/or special contribution conditions and provide certain calculations in justification of such conditions.

Applicant's Response:

- 96 Under the provisions of section 182(B)(5) of the *Planning and Development Act 2000* (as amended), An Bord Pleanála may attach to an approval such conditions as it sees appropriate. This is a matter for the discretion of the Board.
- 97 However, it is noted that Development Contribution Schemes prepared under Section 48 of the *Planning and Development Act* are explicitly restricted to Section 34 development. As such, they cannot be applied to Strategic Infrastructure Development proposed under Section 182A of the Act, as occurs in this instance.
- 98 It is also acknowledged that section 182(B)(6) of the *Planning and Development Act 2000* (as amended), provides for the payment of a contribution in relation to community gain.

182D(6) "Without prejudice to the generality of the foregoing power to attach conditions, the Board may attach to an approval under subsection (5)(a), (b) or (c) a condition requiring –

- (a) the construction or the financing, in whole or in part, of the construction of a facility, or*

(b) the provision or the financing, in whole or in part, of the provision of the service

In the area in which the proposed development would be situated, being a facility or service that, in the opinion of the Board, would constitute a substantial gain to the community”.

99 EirGrid will abide by any such conditions and contributions which the Board may lawfully attach to an approval. In this context, as set out in Section 5.5.3 of the Planning Report (Volume 2A), EirGrid, as part of its Grid25 initiatives announced in 2014, is proposing community gain mechanisms, including a community payment of €40,000 per kilometre for communities in close proximity to overhead lines and substations. This initiative is being applied to all new infrastructure development projects, and is not specific to this proposed development.

2.3 PROPERTY

2.3.1 Overview

100 Potential Impact on Property was raised as an issue in approximately 591 no. of submissions / observations. These submissions are listed in Table 5 of **Appendix 1.2** of this report.

101 This topic considers the potential impact on property and devaluation of property / land / farms. There are a number of recurring issues raised in the submissions in relation to property. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 6 of **Appendix 1.2** of this report.

2.3.2 Response to General issues raised

102 Potential impact on property values is considered in Section 5.5.2 of the Planning Report (Volume 2A).

2.3.3 Potential Impact on Property Values

103 A number of the submissions express general concerns that property along the corridor of the proposed 400 kV line will be devalued. Some of these submissions reference opinions of Estate Agents regarding the extent and / or likelihood of such alleged devaluation. It is noted that there appears to be no evidence submitted to confirm these opinions.

104 In addition a lesser number of submissions express the concern that the new 400 kV line will lead to a sterilised corridor where future property development will be very significantly reduced. The submissions deal with concerns in relation to all property types but mainly refer to residential property and farms.

105 Some of the submissions also outline potential general consequences in relation to property devaluation including:

- (a) A reduced ability to borrow for farm investment against the capital value of a farm affected by high voltage OHL infrastructure; and
- (b) A reduction in the value of assets being transferred to the next generation.

106 The matter of possible devaluation to property due to high voltage OHL infrastructure has been dealt with in the Planning Report (Volume 2A).

107 This section should be read in conjunction with **Section 10.2.4** of this report.

Applicant's Response:

108 Section 5.5.2, paragraph 49 of the Planning Report (Volume 2A) refers to the existing high voltage OHL infrastructure in the area of the proposed development and throughout Ireland. Attention is drawn to the considerable extent of residential and other property development in close proximity to existing high voltage OHL infrastructure. This property development which has continued down through the years in close proximity to high voltage OHL's would indicate that the high voltage OHL infrastructure in itself does not result in effective sterilisation of wide corridors along the lines.

109 In other words, if the general effect of high voltage OHL infrastructure was to cause such a strong reduction in property values then one would expect to see little or no development along OHL corridors over the many decades since the construction of transmission lines in the country and this has not been the case.

110 The proposed 400 kV OHL is not the first of its kind in Ireland as there are two existing 400 kV lines traversing the centre of the country from the electricity generating station at Moneypoint in County Clare, with one terminating at Woodland in County Meath and the other at Dunstown in County Kildare. These 400 kV lines have been in existence since the 1980's and are approximately 440km in total length. They form part of the wider National Grid, which also includes over 1,800 km of 220 kV overhead lines, also supported on lattice steel structures – these lines have also been in existence in the Irish landscape for a number of decades.

111 EirGrid is not aware of any evidence of property devaluation along existing OHL corridors that is at variance with general local, regional or national patterns. Indeed, we have noted in the application documents, and in this response submission, that a number of planning applications for new residential development were submitted along or adjacent to the proposed overhead line alignment subsequent to identification of that alignment.

112 Some submissions refer to research which concludes devaluation of property as a consequence of power lines. The sources of this research are not confirmed in these submissions. On the other hand, Section 5.5.2. paragraph 51 of the Planning Report (Volume 2A) refers to the significant body of international research in relation to high voltage OHL infrastructure and property values.

113 Most of the international research in relation to high voltage OHL's and property values has taken place in North America with very little research in Britain or Ireland.

- 114 Notwithstanding this, only some of this North American research found negative impacts on property values and these effects were generally low and in many cases not statistically significant. Any such negative impacts were generally associated with the consenting and construction phases, but tended to diminish over the ten year period post construction and were restricted to generally narrow bands in the immediate vicinity of the lines.
- 115 Section 5.5.2 paragraph 52 of the Planning Report (Volume 2A) refers to the additional relevant observations from the international research with regard to residential property and these include the following:-
- Where negative impacts were found, the impact of towers was larger than the impact from the transmission lines, thus emphasising the visual component;
 - Where an impact was found the effect diminished rapidly with distance from the high voltage OHL infrastructure. In this regard, the impact from the high voltage OHL infrastructure disappears in the region of 150-200 metres with the maximum impact at even closer distances;
 - Greatly increased media coverage of perceived health issues from 1992 onwards does not appear to have had any major impact on research findings post 1992 compared to pre 1992;
 - Proximity to high voltage OHL infrastructure is just one of a complex mix of variables all of which are always assessed and weighted by purchasers, such as quality of land, proximity to family, proximity to community facilities etc. It is also clear from the results of the international research that the presence of high voltage OHL infrastructure in close proximity is not a high priority consideration for purchasers in many cases relative to the other factors;
 - Where negative impacts were found they generally decrease with the passage of time and in some cases had faded away after ten years. Growth of trees and shrubs would be a factor in this. An additional factor quoted for the reduction in impacts over time has been diminished sensitivity to the proximity of high voltage OHL infrastructure in the absence of adverse media coverage and publicity; and
 - Properties close to high voltage OHL infrastructure appreciate at the same rate as properties located away from high voltage OHL infrastructure.

2.3.4 Potential Impact on Agricultural Land Values

- 116 Section 5.5.2. paragraph 53 of the Planning Report (Volume 2A) deals with certain issues raised in submissions received by the Board relating to agricultural land values and high voltage OHL infrastructure.
- 117 It is concluded that there is practically no evidence in international research to suggest that the value of typical Irish farms would be affected by the presence of high voltage OHL infrastructure. The wide variation between farms and the very low volume of land coming to the market each year are important considerations in this regard.
- 118 An overall conclusion is included in Section 5.5.2, paragraph 54 of the Planning Report (Volume 2A). This conclusion, based on international research and from EirGrid observations in relation to the existing Irish high voltage OHL's, is that in some specific situations it is possible that there may be low level negative impacts on property prices for residential properties in immediate proximity to the proposed OHL development; however,

any such impacts are likely to diminish greatly or disappear completely over time after the construction period. Furthermore, farmland prices are not expected to be affected at all.

- 119 Of course, it should be restated that the owner or occupier of any lands on which new development takes place (for example, lands on which towers are located) are entitled to make a claim for compensation under the statutory scheme.

3 NEED FOR THE PROJECT

3.1 OVERVIEW

- 1 Need was raised as an issue in approximately 188 no. of submissions / observations. These submissions are listed in Table 7 of **Appendix 1.2** of this report.
- 2 A number of recurring issues were raised in respect of the need for the project. The breakdown of particular issues and the number of submissions / observations raising these issues is listed in Table 8 of **Appendix 1.2**. These issues have been summarised in the questions in this chapter and responded to in the accompanying text for each question.

3.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 To understand the need for the project there are a number of specific questions to be addressed: -
 - Why does the island of Ireland need a second North-South interconnector?
 - Why can we not use the existing interconnector to its full potential?
 - Why this particular interconnector?
- 4 The first question above relates to the **strategic need** for a second interconnector on the island of Ireland. The other question relate to the required parameters for the interconnection development proposed or, in other words the parameters that address the **technical need** for the project. The topic of strategic need for the project is addressed in Chapter 4 of Volume 2A. The topic of technical need for the project is addressed in Chapter 2 of Volume 3B. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to the issues raised by the observers.
- 5 In dealing with general issues raised it is necessary to understand the nature and purpose of the transmission system in Ireland. It is also necessary to understand EirGrid's role in developing the transmission system and the particular development needs of the transmission network between the two jurisdictions.

3.2.1 Why does the Island of Ireland need a Second North-South Interconnector?

- 6 As set out at Section 4.2 of Volume 2A of the application for approval (addressing *Strategic Need for the Project – EU Law and Policy*), the European Union is facing significant and long-term challenges relating to climate change, diminishing reserves of fossil fuels, rising energy costs, and expanding populations and economies.
- 7 As a response to meeting these major challenges, the EU has promulgated a number of legislative measures, the requirements of which are binding on Members States (these are summarised at Section 4.2.2 of Volume 2A). Directive 2005/89/EC concerns measures to safeguard security of electricity supply and infrastructure investment; Directive 2009/28/EC concerns *'the promotion of the use of energy from renewable sources'*; and

Directive 2009/72/EC 'concerns *common rules for the internal market in electricity*' and essentially is aimed at introducing common rules for the generation, transmission, distribution and the supply of electricity. It also clarifies competition requirements.

- 8 As addressed at Section 4.2.4 of Volume 2A of the application, the Governments and Regulatory Authorities of Ireland and Northern Ireland identified the benefit of a joint response in meeting the EU-wide energy challenges and to comply with their respective legal obligations and policy.
- 9 In particular, in 2004, the joint Governments published an All-Island Energy Market Framework, promoting integration between the two jurisdictions. This notes that both Governments have a shared interest in more competitive energy markets, reduced energy costs, and improved reliability of supply. This ultimately gave effect to a vision for all-island wholesale trading arrangements in electricity in 2005, with the publication of a high-level design for the Single Electricity Market (SEM).
- 10 The SEM is a market of approximately 2.5 million customers; 1.8 million in Ireland and 0.7 million in Northern Ireland. Development and regulation of the SEM is carried out by a joint decision-making body, the SEM Committee, which is constituted by two representatives of both the Commission for Energy Regulation (CER) and the Northern Ireland Authority for Utility Regulator (NIAUR) who sit alongside an Independent Member and a Deputy Independent Member. The SEM Committee is independent of EirGrid and SONI, and is charged with protecting the interests of electricity customers on the island of Ireland.
- 11 Correspondence to EirGrid and NIE (now SONI) from the SEM Committee, dated April 2013, is included as Appendix 1 of Volume 2A of the application for approval. This letter confirms *"the relevance of the second North South interconnector to the successful implementation of the policy objectives of competitiveness, sustainability and security of supply in both Ireland and Northern Ireland and the necessity to advance and deliver this project, and to not only deliver it but deliver it as a matter of urgency"*.
- 12 In addition to this, it is noteworthy that, as addressed in Section 4.2.4 of Volume 2A, in 2004, the two Energy Regulators on the island of Ireland jointly published a report on the case for a second North-South Interconnector. This concluded that increased interconnection provides additional system security and stability.
- 13 Accordingly, it is the case that the island of Ireland needs an additional interconnector in order to *improve competitiveness, sustainability and security of supply*, in addition to assisting the two Governments to meet their obligations in respect of EU energy law and policies. The subsequent designation of the North-South Interconnector as a European Project of Common Interest underscores the need for the second interconnector.
- 14 In the context of policy, it is important to recognise that EirGrid, in its role as the licensed TSO, does not set energy policy – this is a function of Government. Rather, EirGrid is statutorily obliged to undertake measures to assist in implementing such policy, including developing interconnection opportunities pursuant to its functions as Transmission System Operator (TSO) which are stated in Article 8 of the European Communities (Internal Market in Electricity) Regulations, 2000 (SI 445/2000):

"to operate and ensure the maintenance of and, if necessary, develop a safe, secure, reliable, economical and efficient electricity transmission system, and to

explore and develop opportunities for interconnection of its system with other systems, in all cases with a view to ensuring that all reasonable demands for electricity are met and having due regard for the environment”

3.2.2 What is the Transmission System and its Purpose?

- 15 As described in Section 2.2, Chapter 2 of Volume 3B, the transmission system on the island of Ireland essentially refers to the higher-capacity electricity network, and comprises the 400 kV (i.e. 400,000 Volts), 275 kV, 220 kV, and the majority of the 110 kV network. The all-island transmission system map is shown in **Figure 3.1**. The two red lines represent the 400 kV network, the light blue lines represent the 275 kV, the green lines represent the 220 kV network, and the black lines represent the 110 kV network.

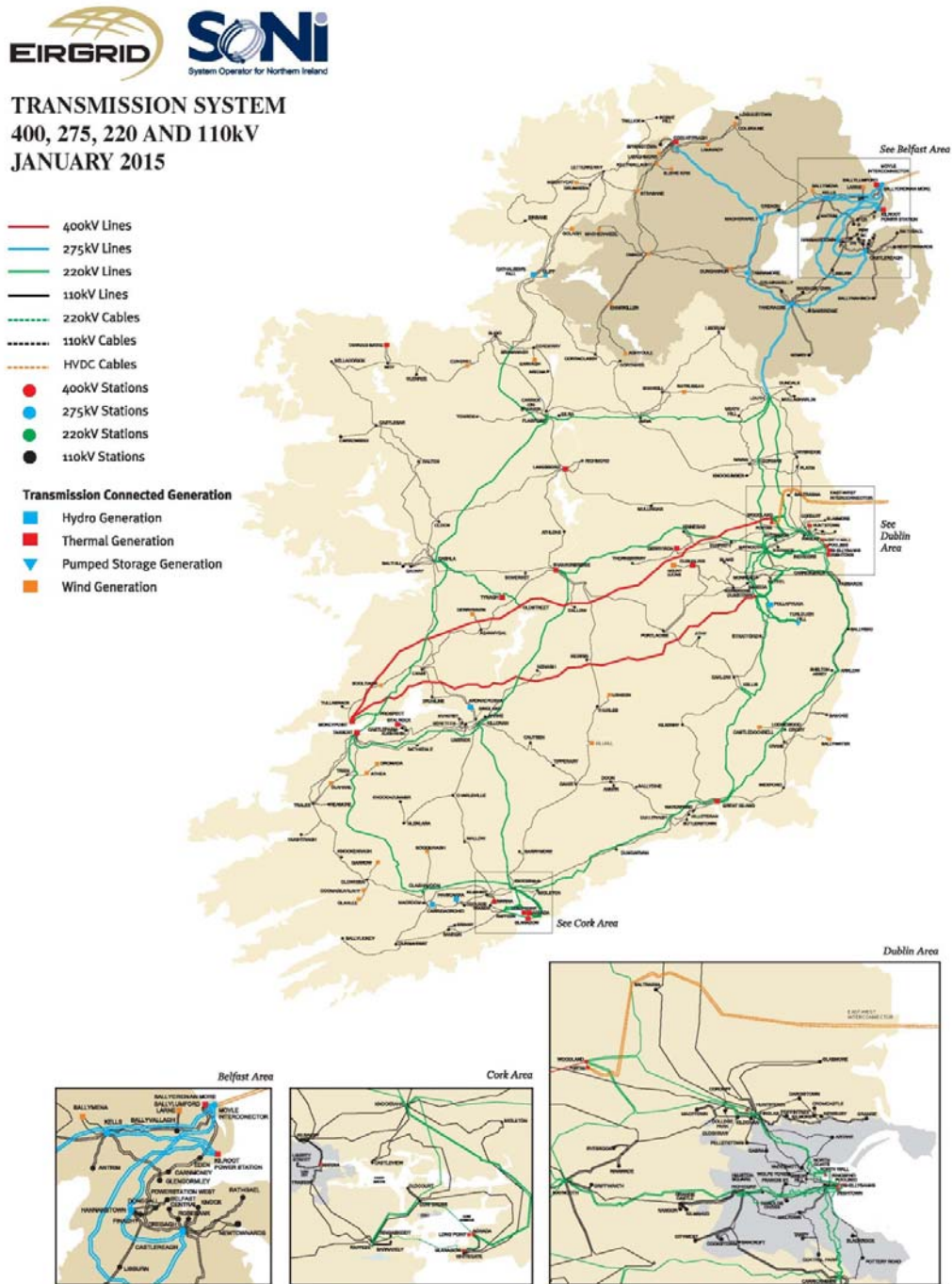


Figure 3.1: Map of transmission system

- 16 The transmission system needs to be robust to be able to fulfil its purpose which is to reliably and economically transport electricity from generation stations to load centres around the entire Island where the power is required by customers. At these load centres, the electricity is distributed to end users via the lower and medium-voltage distribution network, which is the responsibility of a separate Distribution System Operator (DSO).
- 17 The transmission network is meshed which means that there are multiple network paths on which to transport power to any substation (a node where one or more transmission lines meet) so as to ensure that all customers have the benefit of the most secure, reliable and economic power at any point in time.
- 18 The amount of power required by industrial, commercial, farming and domestic customers varies depending on the time of day and year and other factors such as weather, holidays etc. The number of generators providing power and the amount of power each generator provides to the system is constantly monitored and adjusted to match the changing market and customer requirements. The transmission system, therefore, must be flexible and able to cope with the flows of power arising from a wide range of combinations of generation and electrical demand.

3.2.3 What do we Plan the Transmission Network in Accordance with?

- 19 The electricity transmission system must also be robust enough to withstand unforeseen events, such as a transmission line being unavailable (due to a fault or during maintenance), or a generator suddenly becoming unavailable so that another generator located elsewhere has to be used instead. The development of the transmission system is essential to accommodate changes in generation and demand which would otherwise jeopardise the safety and integrity of the system.
- 20 EirGrid carries out its transmission network development functions in accordance with the Transmission Planning Criteria (TPC), a set of technical tests and minimum standards with which the transmission system should comply. These tests and standards are in line with international best practice as defined by the European Network of Transmission System Operators (ENTSO-E), which represents 41 electricity transmission system operators (TSOs) from 34 countries across Europe. A copy of the TPC is available on EirGrid's website.
- 21 These tests and standards are deterministic in nature, which means that transmission networks are not planned on the basis of the likelihood that that an event will occur. Rather, the aim is to prevent situations where the security of the transmission system is jeopardised. In this context, it should be noted that a single event could result in the loss of the existing interconnector. This is considered a credible risk as similar events have happened in the past. Many double circuits (a double circuit means that there are two circuits following the same route using the same towers and that each circuit is positioned on either side of the tower) have tripped over the years including the existing interconnector on 8th October 1995 (this happened due to a mal-operation of the control systems that protect the electricity network from damage arising from electrical faults or disturbances. In this case there was a mal-operation of the under-frequency protection system).
- 22 As mentioned above, the transmission network is meshed, meaning that there is more than one route for power or electricity to flow from the generating station where it is

produced to the demand centre where it is needed. This is illustrated by an example of the transmission network in County Monaghan in **Figure 3.2**, with Lisdrum approximating to the location of Monaghan Town.



Figure 3.2: The electricity transmission grid at Monaghan town (Lisdrum on Map).

- 23 The transmission station from which the Monaghan Town demand is served is known as Lisdrum 110 kV station. This station is connected to the rest of the transmission network by two 110 kV lines namely, Lisdrum – Shankill 110 kV line and Lisdrum – Louth 110 kV line. Since there is more than one transmission line for power to flow to Lisdrum 110 kV station, it is possible to serve the demand connected to this substation, even when one transmission line is not in service, thus ‘keeping the lights on’. The requirement to be able to withstand the loss of one line (or other piece of the network) is known internationally as the “N-1 criteria”.

3.2.4 Why do we Need a Total Transfer Capacity (TTC) of the Magnitude of 1,500 MVA?

- 24 To understand why the proposed interconnector has a nominal capacity of 1,500 MVA, it is necessary to consider what capacity is required by the Single Electricity Market for transferring power between Ireland and Northern Ireland and vice versa at present, and into the future. The requirement for transferring power between the two jurisdictions is known as the Total Transfer Capacity (TTC). With the proposed interconnector in place, the TTC will be calculated across both the existing interconnector and the second north south interconnector.
- 25 As described above, the strategic need for this project is driven by the existence of a single market for electricity on the whole island of Ireland. Consumers in both Ireland and

Northern Ireland pay the same wholesale price for electricity. Electricity generators in both parts of Ireland sell electricity into the market and electricity suppliers buy electricity from the market.

- 26 The single electricity market works on a “least cost” principle, and seeks to match the demand for electricity with the cheapest generators. To do this, the SEM assumes that it can move as much power as is needed across the whole Island, in an unrestricted manner taking no consideration of the transmission network. This market assumption includes the required power flows from Ireland to Northern Ireland and vice versa. The cheapest generators will vary across the year depending on fuel prices and the availability of wind generation, and other factors.
- 27 In the context of moving electricity between Ireland and Northern Ireland, since the commencement of the SEM, there have been unrestricted market flows on a regular basis in excess of 750 MW and at times up to the magnitude of 1,100 MW. Some past unrestricted market flows are shown over time in **Figure 3.3** and **Figure 3.4**. These unrestricted market flows have been sourced from SEM data.

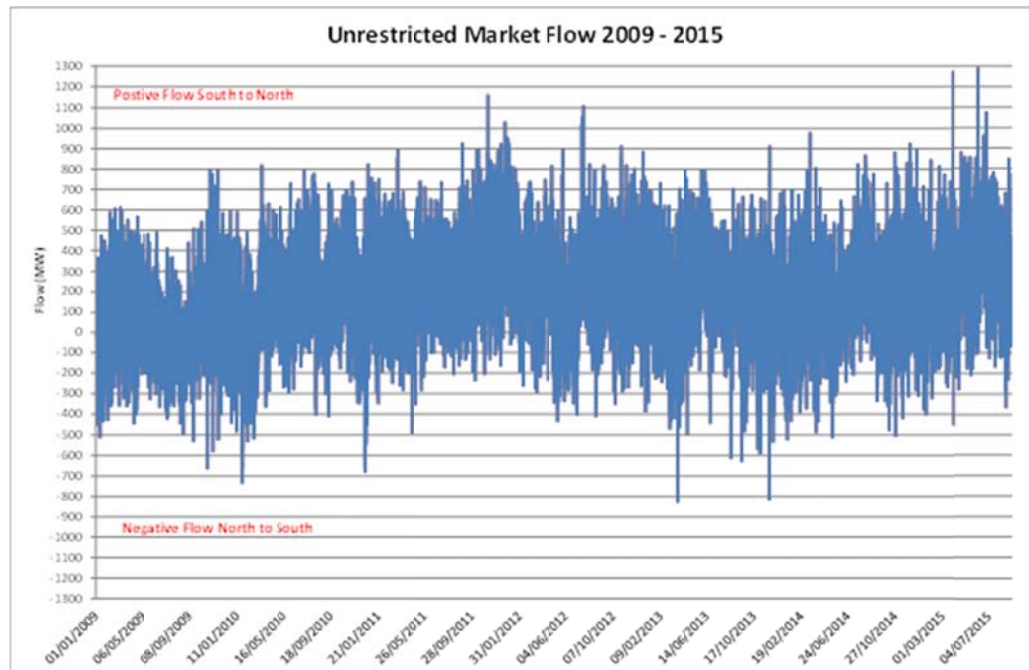


Figure 3.3: Unrestricted market flows between Ireland and Northern Ireland and vice versa from 2009 to 2015

- 28 It is expected that flows of the magnitude of 1,100 MW will continue into the future with histograms of projected flows for 2020 and 2030 shown in **Figure 3.5** and **Figure 3.6** below. These future flows are reproductions of those found in Appendix 2.1 of Volume 3B.

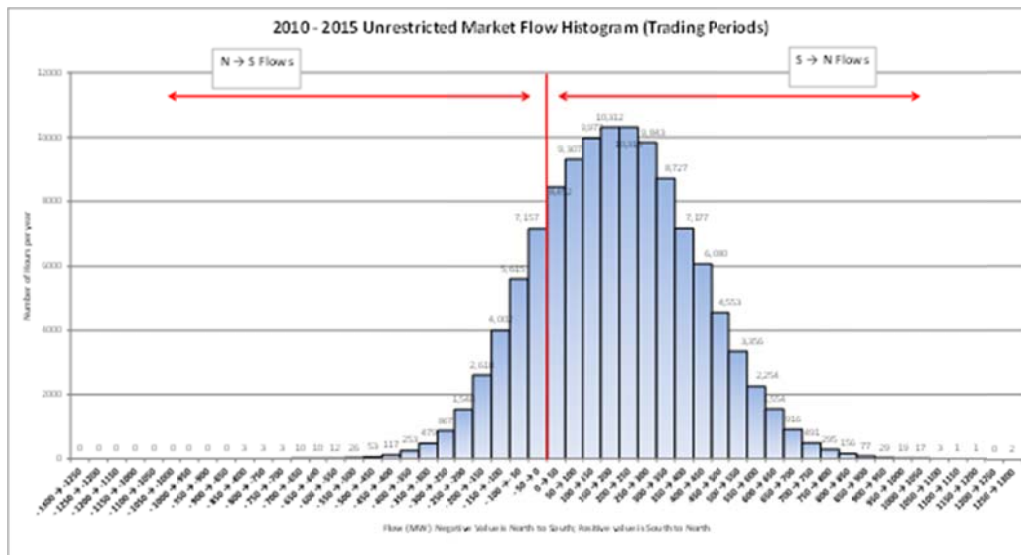
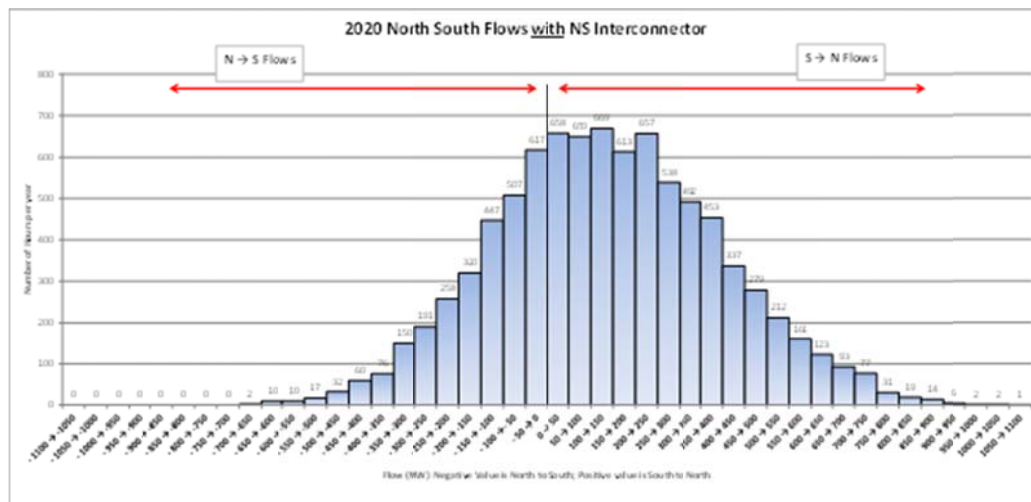


Figure 3.4: Unrestricted market flows between Ireland and Northern Ireland and vice versa from 2010 to 2015 in histogram format.



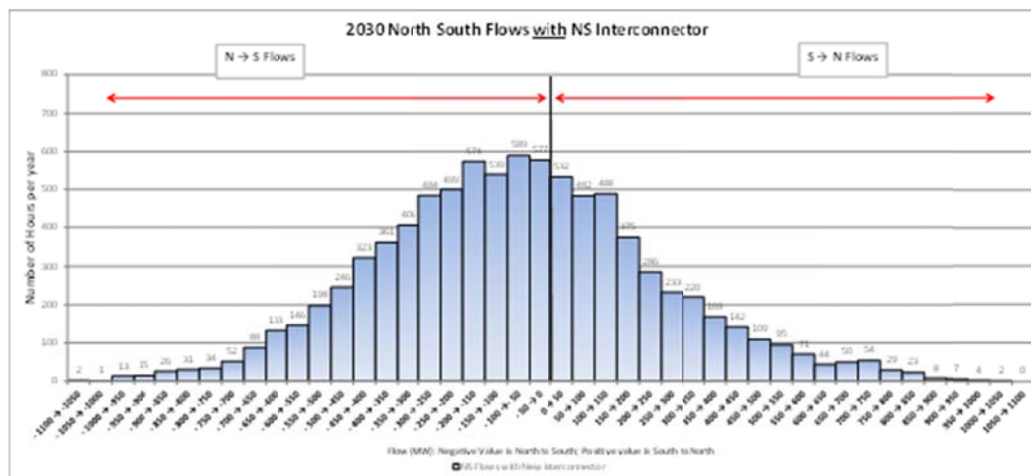


Figure 3.6: Histogram showing North South flows with the new Interconnector in 2030

29 In previous paragraphs it has been shown that a capacity in the order of 1,100 MW is required by the Single Electricity Market for transferring power between Ireland and Northern Ireland and vice versa. Based on these unrestricted market flows, a new interconnector, with a capacity lower than 1,100 MW, would immediately reach a transfer capacity limit between the two jurisdictions. This would continue to restrict the Single Electricity Market for transferring power between Ireland and Northern Ireland and vice versa.

30 The proposed interconnector actually has a nominal capacity of 1,500 MVA. To understand why, it is necessary to stray into the section dealing with Alternatives, but for clarity it is essential to include this explanation in this paragraph. For example, the alternative of constructing a second interconnector using single circuit 220 kV overhead line with HTLS conductor would give a line rating of 760 MW. This would mean that the TTC between the jurisdictions would be 760 MW, taking both interconnectors into account. With reference to previous paragraphs and **Figure 3.5** and **Figure 3.6**, this means that a transfer capacity limit would be reached on a regular basis and would still have a restriction of market flows. In addition, a new transmission line has an expected life time of approximately 50 years and the design of the new infrastructure should be future proofed to be able to accommodate increased power flows.

31 It is therefore not possible to use a voltage level of 220 kV to achieve the desired TTC of the order of 1,100 MW. It is thus necessary to move to the next voltage level which is 400 kV. The standard 400 kV conductor in Ireland has a nominal rating of 1,500 MW³.

3.2.5 Why can we not use the Existing Interconnector to its Full Potential?

32 Some submissions have raised the understandable issue as to the limitations placed on the use of the existing interconnector to its full potential. This topic is dealt with in Section 2.2.3.1, Chapter 2 of Volume 3B and in Appendix 2.1, Volume 3B and the following paragraphs provide further clarification.

³ Based on the nominal 1500MVA rating and no reactive power flow requirement

- 33 In contrast to the unrestricted SEM flows which assume an unrestricted transmission network, in reality, the transmission network across the island and between Ireland and Northern Ireland is actually considerably restricted. As a result, the unrestricted market flows need to be reduced to ensure that the transmission network is operated within technical standards so as to ensure that security of supply is not jeopardised. This threat to the security of supply is an issue today and will continue into the future if not resolved.
- 34 The inefficiencies that result from these restrictions to the transmission network are passed on as a cost to the electricity consumer.
- 35 With the existing transmission network it is not possible to move large amounts of power between Ireland and Northern Ireland or vice versa due to the risk of “system separation”. System separation is the complete electrical disconnection of one part of a transmission network from another part of the transmission network. In this case the electrical separation of Ireland and Northern Ireland. Simply put every circuit that connects Ireland to Northern Ireland is switched out (‘off’) leaving both systems separate from one another. The risk of system separation arises because of the fact that there is only one high capacity transmission line connecting the two parts of the island of Ireland (as explained in more detail below).
- 36 **Figure 3.7** shows the transmission network in the border area between Ireland and Northern Ireland. The two jurisdictions are connected with three transmission lines namely, Louth – Tandragee 275 kV double circuit, Corraclassy – Enniskillen 110 kV line, and Letterkenny – Strabane 110 kV line.

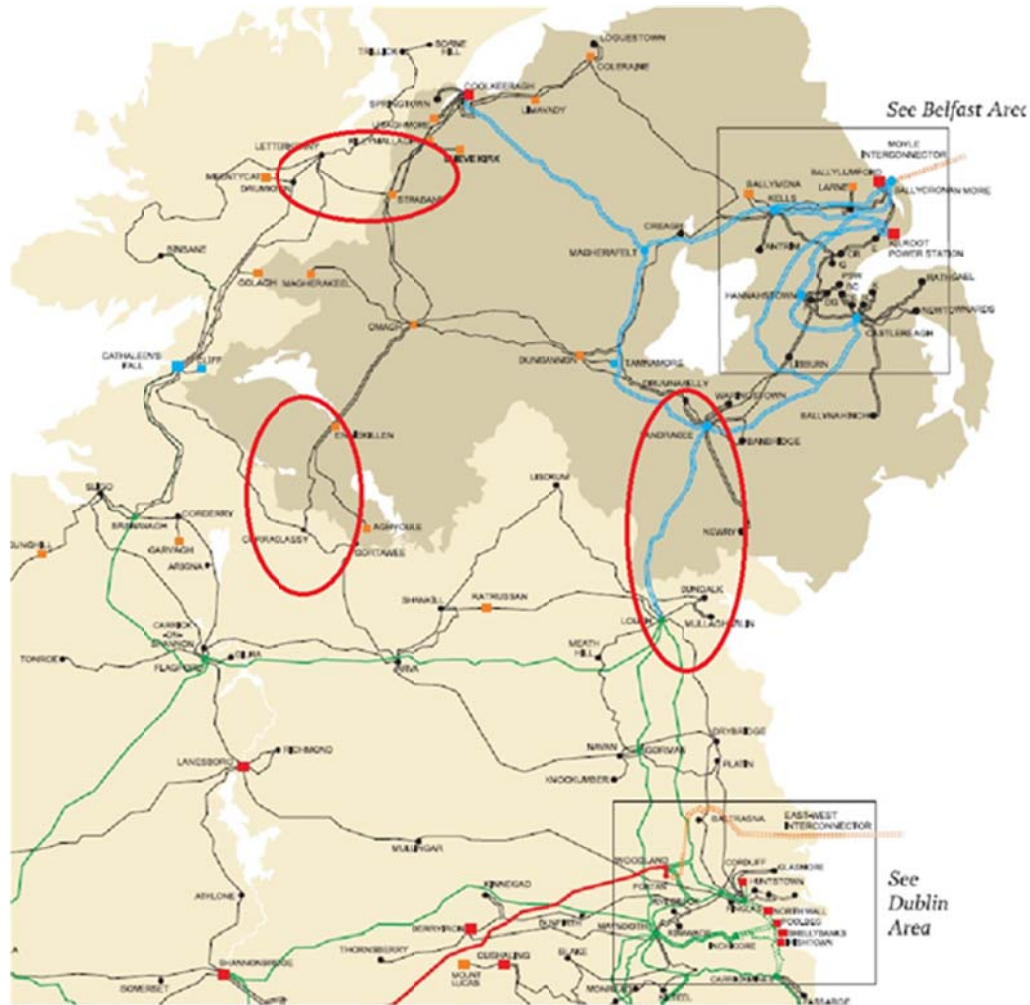


Figure 3.7: Electricity transmission map between Ireland and Northern Ireland

- 37 The Louth – Tandragee 275 kV is a double circuit line and is also known as the existing interconnector between Ireland and Northern Ireland. As a result both circuits can be lost at the same time due to a single event (N-1 criteria).
- 38 The two 110 kV lines, Corraclassy – Enniskillen and Letterkenny – Strabane, were developed to locally support weaker networks in Donegal, Cavan and the west of Northern Ireland. Self-evidently, at 110kV rating, they have a lower capacity than the Louth – Tandragee 275 kV double circuit line. The areas into which they are connected are also weak and inadequate to maintain connection between the two jurisdictions without the Louth – Tandragee 275 kV double circuit line. Therefore, a control system is in place which will remove the two 110 kV lines from service if the Louth – Tandragee 275 kV double circuit becomes unavailable due to a single event (N-1 criteria). Such an event will leave no transmission connections between Ireland and Northern Ireland.
- 39 Such a situation is referred to in Ireland and internationally as “system separation”. This can have severe consequences in both parts of the island of Ireland if there is an imbalance between generation and demand which, in turn, causes a risk to the security of supply of both jurisdictions. The transmission systems would become unstable, leading to a cascading loss of electricity generation and demand until a system black-out occurs.

- 40 Given the risk of system separation, it is clear that the connections between the transmission systems of both jurisdictions are not robust enough to withstand a single event. This is why it is not possible currently to transfer the high amounts of power as set by the unrestricted market.
- 41 As described in Section 2.2.2.1, Chapter 2 of Volume 3B of the EIS, in order to manage the risk to security of supply that system separation causes, it is necessary to restrict the quantity and direction of power flows on the existing interconnector. The power flow needs to be restricted to a level at which system stability can be ensured in both jurisdictions in the event of an unexpected loss of the existing interconnection.
- 42 The amount of power that can flow between either system on the existing interconnector is usually restricted to a maximum of 300 MW in either direction. At times of a power shortage in either jurisdiction it may be possible to increase this to 450 MW for a short period of time (i.e. minutes). This restriction introduces a bottleneck to the flow of electrical power which can be transferred between Ireland and Northern Ireland. Another term used to describe these flows is Total Transfer Capacity (TTC). This is the maximum flow that the network between the two jurisdictions can allow. In the existing network, where a single interconnector is present, the TTC is restricted to these limits.
- 43 As stated in Appendix 2.1 of Volume 3B, it is necessary at present to run at least 3 large generators in Northern Ireland to ensure the stability and security of supply of the Northern Ireland transmission system in the event of system separation. This means that, in general, enough electricity is generated in Northern Ireland to meet most of the demand in the North. However, this situation causes the average flows on the existing North-South Interconnector to be lower than the restricted maximum flow of 300 MW. Accordingly, existing flows (currently below 300 MW) cannot be used as an indicator of future power flows between Ireland and Northern Ireland once the new Interconnector is in place. The impact of this is explained more fully in the need for a 1500MVA interconnector, above.

3.2.6 How does the proposed interconnector deliver benefits?

- 44 The restriction on power flows creates substantially increased costs for consumers. It is not possible for all users of electricity to access the cheapest available sources of generation at all times in line with the market. In order to balance electricity supply with demand it is necessary to run more expensive generators in Northern Ireland and in Ireland than would otherwise be the case if no bottleneck existed. The costs resulting from doing so are known as constraint costs. A result of developing a second North-South Interconnector is that it will be possible to reduce the number of generators required in Northern Ireland for stability and security of supply from three to two, which will result in further savings in the cost of producing power for consumers in both parts of the island of Ireland.
- 45 There are also additional costs to electricity consumers as both jurisdictions must keep more generation capacity connected to their transmission systems to guarantee security of supply than would otherwise be the case if there was no bottleneck. These are known as security of supply costs.
- 46 The restrictions on power flows can only be mitigated by constructing a second high capacity Interconnector between Ireland and Northern Ireland. In a network where two high capacity lines are present, as explained above the TTC, would be 1100 MW and the restriction on the market flows is removed.

- 47 The removal of the restrictions on power flows will result in substantial constraint cost savings for consumers as the cheapest generators on the Island will then be able to meet demand more often. This will result in higher power flows between Ireland and Northern Ireland and vice versa than at present. As detailed in Appendix 2.1 to Volume 3B of the EIS, EirGrid's analysis of 2020 and 2030 indicates that power flows could reach approximately 1,100 MW in either direction. There will also be an additional security of supply saving for consumers as it will be possible to better share generator capacity across the Island.
- 48 Certain submissions have questioned the value to consumers of a second North-South Interconnector. In this regard, the combined savings have been estimated by EirGrid at €20m per annum in 2020 rising to a range of between €40m and €60m per annum by 2030. Further details on these benefits and savings are given in Appendix 2.1 to Volume 3B of the EIS.
- 49 As a second interconnector will improve network capacity in both Ireland and Northern Ireland, further benefits will accrue from the facilitation of the development of renewable power generation by enhancing the flexible exchange of power flows over a large area of the island, and also by reinforcing the North-East Area of Ireland.
- 50 It is not possible to increase the TTC by increasing the power carrying capacity of the existing Interconnector because the overall problem of system separation still exists. Therefore upgrading the conductors on the existing Interconnector with higher capacity conductors or installing series compensation into the existing interconnector will not resolve the identified issue of system separation. The system separation risk still exists as there is only one high capacity line connecting the two jurisdictions.
- 51 Moreover, installing new generation in Northern Ireland will not resolve the strategic deficiency identified relating to the inefficiencies in the single electricity market because the transmission network would remain restricted. This transmission network restriction remains because there is still only a single interconnector. As explained in Appendix 2.1 of Volume 3B, this will result in further cost to the consumer as there would be more generation unable to access the full market on the island of Ireland.
- 52 In a similar fashion, building further Interconnection to other electricity markets, such as BETTA market in Great Britain, will not resolve the strategic need identified relating to the inefficiencies in the single electricity market on the island of Ireland. The presence of a single high-capacity interconnector between Ireland and Northern Ireland would still mean that the single electricity market on the island of Ireland is restricted. It should also be noted that repairing the Moyle Interconnector linking Northern Ireland and Scotland to full capacity has already been included in EirGrid's security of supply assessments and hence the repair of the Moyle Interconnector will not have any further effect on improving the security of supply situation in Northern Ireland.

3.2.7 What does this proposed interconnector do for the North-East Area of Ireland?

- 53 The need for reinforcement of the North-East Area (namely, counties Louth, Monaghan, Cavan) is set out in Section 2.3.4 of Volume 3B. In summary, it is explained that the decline in national electricity consumption as a result of the economic downturn has led to a reduction in the peak demand in the North-East area. The forecast demand in the area is at present not predicted to return to a level that would require reinforcement for more than 10 years. Although the need to reinforce the North-East area for security of supply reasons is no longer an immediate driver for the delivery of the proposed North-South

Interconnection Development, the presence of the proposed interconnector will nevertheless reinforce the electricity transmission network in the area by providing an additional high capacity circuit in the region, thus reducing flows on the existing circuits. It is anticipated that, in the period before reinforcement is required, the new Interconnector will provide sufficient additional transmission capacity in the area to cater for increases in electricity demand due to economic recovery, such as population growth and the connection or expansion of large industrial consumers.

3.2.8 Cost Benefit Analysis

- 54 A number of submissions have raised queries in relation to cost benefit analysis of the proposed development.
- 55 EirGrid develops Ireland's electricity system in accordance with the framework set out under statute and in licence, in an economical and efficient fashion having due regard for the environment. Under this framework EirGrid takes into account the costs and benefits associated with need, recognising that a number of these are embedded, either explicitly or implicitly, within the transmission planning standards (Transmission Planning Criteria). These criteria set out elements such as the security of supply standards for the transmission system which EirGrid is charged with delivering.
- 56 In addition, EirGrid considers monetised costs and benefits associated with alternative technological choices to meet identified need, employing industry standard market models and examining overall societal benefit which are derived from the facilitation of greater competition and lower overall electricity production costs. In so doing, EirGrid employs a societal discount framework, recognising that it is not EirGrid as project promoter who would ultimately benefit from the project delivery but rather society at large.
- 57 Effectively, the framework is concerned with the balance between customer benefits arising from the development, and the investment costs that must be shared between all electricity customers across a period of time. This balance is a matter for the Regulatory Authorities, who have confirmed their strong support for the proposed development.

4 CONSULTATION AND PROJECT METHODOLOGY

4.1 CONSULTATION

4.1.1 Overview

- 1 The analysis of the submissions identified issues in relation to consultation and communications with the public, other stakeholders and landowners. In summary, communications / consultation was raised as an issue in approximately 284 no. of submissions / observations. These are listed in Table 9 of **Appendix 1.2**.
- 2 A breakdown of the recurring communications / consultation issues raised in submissions is provided in Table 10 of **Appendix 1.2**.
- 3 The general issues that arose in relation to public and landowner consultation in the submissions made to An Bord Pleanála can be divided into the following two topics, namely:
 - Consultation with the public; and
 - Consultation with landowners.
- 4 EirGrid acknowledges that lessons have been learned with regard to consultation at various stages in relation to the evolution of the proposed development, most notably the approach to consultation in respect of the previous Meath-Tyrone 400 kV Interconnection Development, between the years 2007 and 2010.
- 5 As part of the re-evaluation of the project between 2010-2013, a review was undertaken of all of the issues that were raised in written submissions and presentations made to An Bord Pleanála in respect of the planning application for approval in 2010. The output of this review was published by EirGrid in Appendix A of the *Final Re-evaluation Report*, published in April 2013, and included within the current application as Appendix A of Volume 2B. Consequently, this Response Report focuses upon issues raised regarding public consultation undertaken by EirGrid on the current (2015) application for planning approval.
- 6 In response to a review of the issues that arose during the previous application, EirGrid devised and implemented a programme of public and landowner consultation leading up to the current application. The programme of consultation undertaken by EirGrid is fully documented in the *Public and Landowner Consultation Report* (Volume 2B of the application for approval).
- 7 It is not proposed to reiterate the details of Volume 2B but instead, in the context of issues raised in the submissions and observations received by the Board, to provide an overview of the approach undertaken by EirGrid (which was aimed at providing wide engagement opportunities for the public and landowners to participate in the pre-application consultation process).
- 8 There is a degree of overlap with respect to issues raised in the context of communications / consultation with other issues being responded to within this report. In such cases, the relevant section of this report is cross referenced.

4.1.2 Consultation with the Public

9 It is stated by some observers that EirGrid had either not consulted, or that it had failed to adequately consult, with members of the general public, communities and residents potentially affected by the proposed development.

Applicant's Response:

10 Consultation and engagement with members of the public, landowners, elected representatives, community and local groups, and other interested bodies has comprised a fundamental element of the North-South 400 kV Interconnection development project.

11 EirGrid set out detailed and extensive plans to provide an awareness of the project and to provide opportunities for the public to participate in the consultation process; these are fully documented in Volume 2B. A chronology of consultation milestones and activities and events that took place from 2007 prior to the submission of the planning application is set out in Figure 3.7 of Volume 2B.

12 EirGrid has undertaken a number of activities and put in place a number of communications channels to enable a two-way flow of information with the communities, landowners and residents potentially affected by the project, details of which are provided in Volume 2B, and are summarised below as:

- Provision of a project website that was regularly updated, in particular prior to the announcement of each stage of the project development process, including the publication of Frequently Asked Questions (FAQs), brochures and press releases summarising activity and reports in a digital format to those who required or preferred that method. All methods by which the public could make contact with EirGrid, including details of the project information service, information offices and open days were provided on the project website;
- Provision of a dedicated lo-call phone number for people to talk to a member of the project team and / or obtain specific information (such as a map of the project in their location);
- Dedicated email address and postal address which was widely publicised through press releases to the media;
- Provision of three information centres, located in Navan, Carrickmacross and Kingscourt (located in Cootehill from July 2015 onwards) where members of the project team were available to meet with members of the public to discuss their concerns. Hard copies of all information material, including project reports, were available at each of these three information centres;
- Organised meetings with representatives of community groups by request to discuss and address issues raised;
- Hard copy information was made available to the public via the project information service (phone line, email and at the project information offices); and
- Public open days held during focused periods of consultation which allowed members of the public to engage directly with specialists across the project disciplines, view maps, ask questions and to provide feedback to the project team.

- 13 It was recognised by EirGrid that creation of awareness of the project was critical to ensure the ongoing participation of the public throughout the project development and consultation periods. To this end, media and advertising campaigns were used to support the public consultation process. By way of example, Figure 3.2 set out in Chapter 3 of Volume 2B demonstrates the press and broadcast coverage achieved by the project between April 2011 and the end of September 2013. The high levels of awareness of the project facilitated an effective roll-out of the key elements of the public and landowner consultation undertaken by EirGrid, as detailed in Volume 2B.
- 14 Despite EirGrid's efforts to consult and engage with all stakeholders, a number of difficulties were encountered during the development of the project. These are set out in Section 3.7 of Volume 2B and by means of example include:
- Receipt of feedback that was outside of the terms of reference provided to the public for a particular consultation event, and related instead to matters of national or global policy – which were outside the remit of the project and/or the consultation;
 - Attendance at some of the open days and events and project information centres was lower than anticipated or hoped; and
 - Forms of authority and legal instruction provided by certain members of the public and landowners precluded EirGrid and its agents from having direct communications with those persons.
- 15 As set out in Section 3.4 of Volume 2B, as part of the commitments made by EirGrid in its review of its approach to consultation, published in December 2014, EirGrid placed advertisements for the recruitment of community liaison officers (CLOs) and agricultural liaison officers (ALOs). These appointments will support stakeholder engagement throughout Ireland (including Meath, Cavan and Monaghan). The ALOs will liaise with key agricultural stakeholders and landowners in regard to transmission infrastructure development in all phases of the project.

4.1.3 General Issues Raised in respect of Public Consultation

- 16 A number of recurring issues were raised in relation to consultation with the general public and these were identified under the following sub-headings and are responded to thereafter:
- Project Information Centres;
 - Information events/open days;
 - The Project Website;
 - Responding to Issues Raised;
 - Public information materials; and
 - Compliance with legislation and best practice.

4.1.3.1 Project Information Centres

- 17 A small number of observers raised issues in relation to EirGrid's Project Information Centres. Issues raised were that the information centres were not conveniently located to people's homes or accessible to those without access to a car and / or ability to drive. Another issue that featured in a small number of submissions was that the opening hours

were unsuitable for those working during the day, in particular for people who work long hours.

Applicant's Response:

- 18 As detailed in Volume 2B, EirGrid opened project information centres within the project study area where the public could obtain information and meet with members of the EirGrid project team. The standard opening hours were originally 1pm to 7pm and were changed to 12 noon to 7pm in response to feedback received throughout consultation for longer opening hours. Appointments outside of these core hours were available to those who advised that the hours were unsuitable to their working schedule. EirGrid's willingness to meet with people outside of the core information centre hours (12 noon – 7pm) was publicised in project information materials and via press releases issued to regional and local media.
- 19 Additionally, EirGrid offered to meet members of the public at locations convenient to them in the event that an information centre was not a convenient option. Personal meetings for members of the public and groups were available on request. This has included meetings with members of the public and groups in venues within their area, their private residences, and / or community and sports halls.
- 20 The information centres were supported by the Lo-Call phone line, e-mail service, and written service. Initially, there were two centres provided, at Navan and Carrickmacross, and a third centre, provided in Kingscourt, was added at the final re-evaluation stage of the consultation, in response to feedback received from members of the public for EirGrid to provide a centre in County Cavan.

4.1.3.2 Information Events/Open Days

- 21 Some submissions alleged that open day events had been poorly advertised, while a small number of observers stated that they had not been in a position to travel to EirGrid consultations.

Applicant's Response:

- 22 It was recognised by EirGrid that creation of awareness of the project, and, in particular, of events and request for feedback deadlines, was critical to ensure the ongoing awareness and participation of the public throughout the project development and consultation periods. Media (both print and radio) were identified as a conduit for EirGrid to disseminate information to the public about the consultation process.
- 23 As detailed in Volume 2B, press releases were issued by EirGrid to local and regional media to ensure that people were aware of the opportunities to participate in the consultation process. Advertisements were also placed in local media by EirGrid to inform members of the public of details of forthcoming consultation periods and/or of publication of reports at key junctures in the project development process.
- 24 Details of the media activity and advertising undertaken by EirGrid at each phase of the project, commencing at the re-evaluation stage, is presented in Volume 2B and include the following:
- Consultation on the Final Re-evaluation Report – Table 5.7 and Section 5.6.3.1;

- Consultation on the Preferred Project Solution Report - Table 6.1 and Section 6.2.3.1; and
 - Communications activity undertaken between March 2015 up to submission of the Planning Application – Table 8.1.
- 25 EirGrid considers that the issue of press releases and advertisements to local, regional and national media, as documented in Volume 2B, facilitated high levels of awareness of the project within the study area, and of how to engage on the project.
- 26 As stated in the response within the previous section, EirGrid was available to meet with members of the public on request, both outside of opening hours of the information centres and in locations convenient to the public.

4.1.3.3 The Project Website

- 27 It was stated that not all of the existing power lines in stakeholders areas are shown on the maps provided on the EirGrid website. Some submissions stated that consultation had been channelled through the internet in an area where there is little or no broadband and that not everyone had and/or has a computer and/or access to the internet and/or computer literacy to access the information.

Applicant's Response:

- 28 From the commencement of the re-evaluation of the project, the overarching aim was to ensure that anyone who wanted to engage with EirGrid in relation to the North-South 400 kV Interconnection Development was aware of the process and afforded an opportunity to do so. EirGrid's approach to consultation involved multiple communications methods, which sought to ensure that all members of the public were provided with an opportunity to engage with the project team in their preferred manner and could access information via traditional methods (via post, hard copy reports and documents) in addition to online methods.
- 29 Provision of information online formed just one method by which the public could access and/or request information about the project. This method was supported by other methods adopted as part of the consultation approach which included other communications methods and tools as set out in Section 3.6 of Volume 2B, including:
- EirGrid opened local project information centres within the project study area – details of these information centres is provided in Volume 2B and in a preceding section of this report.
 - Provision of hard copy documentation via the project information service phone line and at the project information centres – where all information material, publications and reports were made available in hard copy format.
 - Provision of a postal address whereby members of the public could write to EirGrid to request copies of information/publications/brochures or to submit their feedback.
 - A number of open days and information evenings were hosted by EirGrid as part of the approach to consultation to provide an opportunity to meet face-to-face with the EirGrid team, meet specialists (such as agronomy, EMF and archaeology). Hard copies of project information were available to the public at each of these events.

- Personal meetings for individuals or small representative groups were also available to stakeholders, so that they could have their questions answered in a more individual manner.

30 EirGrid is satisfied that throughout all of its consultation phases and activities, a considerable variety of means and methods of accessing information were provided, both via traditional methods (post, in hard copy at information centres and open days) and online (via the project website and via email).

4.1.3.4 Responding to Issues Raised

31 EirGrid's response to issues raised has been referenced in certain submissions / observations received by the Board. Issues identified included claims that members of the public had not received sufficient information or answers to their questions from EirGrid, that public feedback had not been taken into consideration, ignored, or had not been taken into account by EirGrid.

Applicant's Response:

32 At all stages of the consultation undertaken by EirGrid, prior to the submission of the application for approval in June 2015, issues raised by stakeholders were recorded, reviewed and considered by the project team. Section 5.6.4.2 of Volume 2B sets out the method by which feedback received in response to consultation undertaken on the project was recorded and subsequently reviewed and considered by the project team.

33 Efforts were made to address these concerns through the various consultation methods and tools utilised by EirGrid in its approach to public consultation. These endeavours included responding to issues via project reports, regularly produced Frequently Asked Questions (FAQs) documents, Community Update Brochures (directly mailed to members of the public and available at each of the project information centres) meetings with members of the public, elected representatives and landowners, press releases to local, regional and national media, further investigation by technical specialists, reporting of the output of consultation and face-to-face meetings and discussion with those who attended open days and / or the project information centres.

34 During the re-evaluation of the project, EirGrid conducted a comprehensive review of the issues that had been raised by the public in their submissions to An Bord Pleanála as part of the previous application, submitted in 2010. EirGrid published its report on the review of these issues in Appendix A of the *Final Re-evaluation Report* (included as Appendix A to Volume 2B). All of the issues raised continued to be considered by EirGrid as the project progressed towards the preparation of a new planning application.

35 EirGrid formally consulted on its *Preliminary Re-evaluation Report*, published in May 2011, between 9th May 2011 and 1st July 2011. Submissions that were received during this time were reviewed and considered by EirGrid and a response was published to each of the submissions (18 no.) in Appendix B of the *Final Re-evaluation Report*, included as Appendix C of Volume 2B.

36 Consultation on the findings of the *Final Re-evaluation Report*, published by EirGrid in April 2013, was subject to consultation between 16th April and 27th May 2013. The output of the consultation, including a considerable level of feedback provided by meetings in Monaghan facilitated by the County Monaghan Anti-Pylon Committee, was documented in Chapter 2

of the *Preferred Project Solution Report* (July 2013), which was also the subject of a focused public consultation period (between 16th July 2013 and 9th September 2013).

- 37 EirGrid acknowledges the time and effort made by members of the public (and landowners) to provide their feedback on the findings of the *Final Re-evaluation Report*. Chapter 2 of the *Preferred Project Solution Report* (included as Appendix E of Volume 2B) summarised feedback that was received during engagement that took place on the *Final Re-evaluation Report* and provided information on how all of the information obtained had been assimilated, and where appropriate, had informed the identification of the preferred line design. The account of the feedback received from the public was collated (having regard to the terms of reference of the consultation), was reviewed and considered by the project team and responded to by EirGrid under the following sub-headings:
- Submissions relevant to the Final Re-evaluation Report;
 - Submissions relevant to the Preferred Project Solution Report;
 - Submissions relevant to the Environmental Impact Statement (EIS); and
 - Submissions on Community Gain.
- 38 A considerable amount of feedback had been received from members of the public during public consultation on the *Final Re-evaluation Report*, and this was considered in the development of subsequent stages of the project, including the preparation of the Environmental Impact Statement (EIS). These issues were fully documented in Appendix C of the *Preferred Project Solution Report*, which was entitled *The Final Re-evaluation Public Engagement Report*.
- 39 Section 5.6.6 of Volume 2B sets out how responses to issues raised during public consultation on the *Final Re-evaluation Report* have been responded to and addressed by EirGrid.
- 40 Community update brochures were published at each stage of the consultation and served to highlight key project developments and milestones, to summarise key reports and documents, and to answer questions raised throughout the consultation process. Additional booklets on key issues that had been identified during earlier stages of the consultation, such as health, construction of the project and EMF, were also produced by EirGrid. These reports, brochures and publications were, and remain, available to all interested members of the public in hard copy or via the project's dedicated website (<http://www.eirgridprojects.com/projects/NorthSouth400kVInterconnectionDevelopment/>).
- 41 Volume 2B also sets out the feedback that was received as a result of extensive consultation effort undertaken throughout the project development stage. The feedback received has been documented under the following sub-headings:
- Level of participation received during the consultation;
 - Nature of the feedback received – where the nature of the issues raised by the public is documented;
 - Responses to issues raised; and
 - How feedback influenced the project development.
- 42 Section 6.2.6 of Volume 2B sets out further detail as to how responses to issues raised during public consultation were responded to by EirGrid. EirGrid acknowledged receipt of written submissions received and stated the issues raised would be reviewed and considered by the project team.

- 43 Requests for copies of reports and / or bespoke maps (e.g. map showing proximity of the proposal to a chosen location) were provided via the project information service.
- 44 Table 6.5 of Volume 2B sets out key concerns identified to EirGrid on the *Preferred Project Solution Report* and indicates where these issues are addressed as part of the EIS and / or supporting information submitted by EirGrid to An Bord Pleanála as part of this planning application.
- 45 Feedback from the public and landowners received throughout the consultation affected the development of the project at each stage (as set out in Volume 2B), and ultimately, on the proposed application for approval now sought from An Bord Pleanála.

4.1.3.5 Public Information Materials

- 46 Some of the submissions / observations received by the Board raised issues regarding the public information materials provided. A small number of submissions stated that information provided by EirGrid was confusing and / or misleading, while a few raised concerns in relation to the content of the non-technical summary and DVD containing information produced for the planning application, citing confusion with the level and complexity of the information provided.

Applicant's Response:

- 47 EirGrid's approach to public consultation has involved multiple methods by which the public could engage with EirGrid and its project team to either discuss the information presented or obtain further information (as set out in full in Volume 2B). This approach has aimed to ensure that the public had access to EirGrid and its project team and facilitated an opportunity for the public to meet with EirGrid and discuss the content of any information presented, particularly where a member of the public may have been confused or unsure about any aspect presented.
- 48 Section 8.3 of Volume 2B sets out the requirements of the planning approval process including details as to how the public could continue to engage with the project team during the period of statutory public consultation that would take place following submission of the application for approval to An Bord Pleanála.
- 49 EirGrid acknowledges that the planning application documentation comprises a substantial volume of information and evaluation. In recognition of this fact and to assist the public to obtain information presented within the application, EirGrid undertook the following during the 10-week statutory public consultation phase:
- Continued to operate its project information service through the project phone line and email service;
 - Each of its project information offices opened for the duration of the 10-week statutory period of consultation and members of the EirGrid project team were available to provide assistance and guidance to the public in relation to obtaining information/viewing the application documents;
 - Each of the three project information offices opened full time during weeks 1 and 10 from 12 noon until 7pm (Week 1: Tuesday 16th June to Monday 22nd June 2015) and week 10 (Monday 17th to Friday 21st August 2015). Outside of these weeks, the offices were open for two days per week in Navan and Carrickmacross, and one day per week

in Cootehill (which replaced a former office in Kingscourt which became unavailable to EirGrid from April 2015 onwards). Details of the opening hours arranged by EirGrid for this period were advertised to the public, and were included in the Community Update Brochure, dated June 2015 (included in Appendix M to Volume 2B), and

- A brochure was produced by EirGrid as a guide for the public to access information about the application and to offer assistance to them in obtaining information regarding its content and where documents could be viewed (both online and in hard copy format).

4.1.3.6 Compliance with Legislation and Guidance Principles

- 50 A number of submissions refer to and seek to place direct reliance on the Aarhus Convention (UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters) relating to public participation.

Applicant's Response:

- 51 EirGrid has fully complied with the principles of public participation contained in the Aarhus Convention in respect of the project or proposed development. While the Aarhus Convention has been ratified by Ireland and the European Union, as an international agreement it is not in itself part of Irish domestic law. Certain principles in the Aarhus Convention are reflected in specific Irish legislation and form part of Irish law. However, apart from these provisions it is only to the extent that the Aarhus Convention has been subsumed into EU law (either by virtue of the fact that it is an international agreement adopted by the Union or its provisions have been incorporated into primary EU legislation such as the new consolidated version of the Environmental Impact Assessment Directive 2011/92/EU), that the Irish Courts are obliged, in an appropriate case, to give effect to the terms of the Convention as part of these wider EU law obligations.

4.1.4 Consultation with Landowners

- 52 The view was expressed in submissions that EirGrid had not consulted with landowners, had not listened to landowners' concerns and / or it had not taken landowner feedback into account in the development of the project.

Applicant's Response:

- 53 As outlined on page 133 of Chapter 7 of Volume 2B, the approach undertaken for landowner engagement was directly informed by feedback received from landowners on the consultation activities and events that took place during the initial stages of the project (i.e. during 2008 and 2009), to EirGrid's development of a proactive, tailored landowner approach to landowner engagement at the commencement of the re-evaluation of the project in 2011. The approach sought to provide opportunities to landowners to be consulted and engaged with to secure their inputs at the earliest possible point in the design process.
- 54 EirGrid acknowledges the issues raised by landowners, and in particular, sought to address issues and difficulties that had been encountered and instances by landowners in respect of the previous application for approval. EirGrid is seeking to minimise disturbance to current land use and farm management practice and as a result adopted a proactive approach to landowner engagement for the project. EirGrid's specific and targeted process

of landowner engagement undertaken for the North-South 400 kV Interconnection Development is set out in detail in Chapter 7 of Volume 2B of the application.

- 55 Multiple communications with landowners sought to ensure that all landowners were provided with an opportunity to access information via traditional methods (post, hard copy information, meeting with the project team, landowner engagements) and online information (via the EirGrid website and email).
- 56 EirGrid's specific and targeted approach to landowner engagement integrated the review and reporting of landowner feedback and participation into the development of the project. This included preparation of Chapter 7 of the Public and Landowner Consultation Report (Volume 2B and associated Appendix I).
- 57 Correspondence issued by EirGrid to affected landowners throughout each of the three phases of landowner engagement is set out in Chapter 7 of Volume 2B, in the following sections of this report, and summarised in **Table 4.1** below:

Table 4.1: Location of Summary of Correspondence with Landowners for each of the Three Phases of Landowner Engagement, as set out in Chapter 7 of Volume 2B

Phase of Landowner Engagement	Location of Information Set Out within Volume 2B of the Planning Application
Phase 1	Table 7.2; Appendix I(i)
Period between Phase 1 and 2	Table 7.3; Appendix I(i)
Phase 2	Table 7.4; Appendix I(ii)
Phase 3	Table 7.5; Appendix I(iii)

- 58 EirGrid commenced engagement with landowners on the indicative line route for the North-South 400 kV Interconnection Development, identified in the re-evaluation process, in May 2011. As part of this round of engagement, all landowners were issued with letters and maps showing the indicative route of the line as then envisaged on their property and the (ii) Landowner Terms of Reference developed for landowner engagement for the new application. The Terms of Reference set out a specific phased approach to landowner engagement that aimed to clearly set out and explain the opportunities for landowners to participate in each phase. This was the first of two letters issued to landowners during Phase 1 of landowner engagement. An important function of the initial letter was to engage with as many landowners as possible to secure their inputs at the earliest possible point in the design process. The Terms of Reference for Landowner Engagement is provided in Appendix I (i) to Volume 2B of the *Public and Landowner Engagement Report*.
- 59 A second letter was issued in Phase 1 to inform landowners that the initial consultation period that was due to expire (6 weeks – to 17th June 2011), had been extended by a further two weeks to permit further engagement with landowners. A summary of the detail of each landowner mail out undertaken by EirGrid as part of Phase 1 of landowner engagement is provided in Table 7.2 of Volume 2B.
- 60 During Phase 1, landowner agents, from EirGrid, ESBI and Tobin Consulting Engineers, attempted to visit each landowner on the indicative line route. The team made at least

three attempts to visit / meet with each landowner. A pre-survey checklist (provided in Appendix I (part ii) of Volume 2B) was completed by each landowner agent during the course of their visit and discussion with each landowner.

- 61 Where direct engagement on the ground with a landowner was not possible or not achieved, a further letter detailing the visit / meeting attempts was issued to the landowner, requesting they contact the landowner team. The objective of this engagement was to meet directly with each landowner and discuss the indicative line route, obtain their feedback and to confirm ownership.
- 62 Samples of landowner correspondence (including maps) provided in Phase 1 of the landowner engagement approach are provided in Appendix I (part ii) of Volume 2B of the application.
- 63 Phase 2 of landowner engagement focussed on the preferred line route and indicative access routes. This phase formed part of the structured and parallel process of public consultation that ran for a period of eight weeks, commencing on Tuesday, 16th July 2013 to Monday, 9th September 2013.
- 64 Phase 2 engagement with landowners by the project team sought to:
- Confirm ownership of landholdings;
 - Request feedback on the preferred line route, tower locations and access routes;
 - Seek landowner feedback in order to minimise impact on farming practices;
 - Understand matters of local importance, interests, concerns; and
 - Identify any local constraints not already known.
- 65 In July 2013, as part of Phase 2 of landowner engagement, each landowner was invited to engage with EirGrid and was sent:
- Updated maps of the preferred route and proposed tower locations;
 - Updated maps of indicative access routes;
 - A Landowner Information Brochure that set out:
 - Background and context;
 - The landowner engagement terms of reference;
 - Details of open days and of the project information centres where landowners could meet the project team and discuss the proposal directly with EirGrid;
 - Progression towards a new planning application;
 - Guidelines for the design of overhead lines and positioning of towers;
 - The guidelines for the identification of construction access routes;
 - Detail (including a diagram illustration and range of sizes) for the type of towers proposed;
 - Reference to the removal of limits of deviation from the proposal (i.e. that EirGrid would not be seeking flexibility in the new application in respect to the movement of tower positions (i.e. micro-siting) post-planning;
 - Reference to the movement of towers from hedgerows;
 - Offer of an agronomist to assist the landowner to assess the proposal on their landholding/land management practices; and
 - The process for applying for a change to the proposal and how the landowner could influence the line design and tower positions via the Landowner Change Request Form.

- 66 Samples of correspondence issued during Phase 2 are provided in Appendix I (part iii) of Volume 2B, and details of the information provided to landowners during Phase 2 of landowner engagement is summarised in Table 7.4 of Volume 2B.
- 67 To facilitate consideration of landowner's requested changes to the proposed development a change request form, included in the Landowner Information Brochure, specifically asked landowners the following information:
- Their preferred method of contact (i.e. phone, email, post, visit);
 - Would they like to meet directly with EirGrid;
 - Would they like an agricultural advisor to carry out an assessment of the impact the proposal may have on their farm practice;
 - Would they allow access for an environmental field survey of their property so that EirGrid could assess any change request made;
 - Did they have any feedback on the proposed line route, tower locations or indicative access routes detailed on the map; and
 - Feedback and details of their proposed change(s) and their reasons for the requested change(s).
- 68 The process by which change requests were considered by EirGrid and the project team is set out in Section 7.3.3.1 and 7.3.3.2 of Volume 2B.
- 69 Change requests received were assessed by EirGrid, ESBI and Tobin Consulting Engineers in line with the *Guidelines for Overhead Line and Tower Positioning*, described in the *Landowner Information Brochure* and *Preferred Project Solution Report*.
- 70 The outcome of the assessment of each change request received was communicated to each landowner in writing. Where a request for a change could not be accommodated, the reasons for same were outlined in the letter to the landowner and the landowner invited to contact their designated landowner agent if they wished to obtain further information and/or discuss. Appendix I (iv) to Volume 2B provides a sample of the correspondence issued to these landowners at this juncture.
- 71 Phase 3 of landowner engagement was undertaken to inform landowners of the route alignment that EirGrid was intending to submit to An Bord Pleanála. Details of the information that was issued to landowners during this phase is set out in Table 7.5 of Volume 2B, with examples of correspondence provided in Appendix I (iv) to Volume 2B.
- 72 As part of Phase 3, landowners were issued maps and information that identified the route and tower locations as well as information on the statutory consultation phase that would take place following the submission of the planning application. Samples of correspondence issued are provided in Appendix I (iv; v) and Appendix J (Community Update Newsletter, December 2013).
- 73 The line route published by EirGrid in December 2013, and communicated to landowners at that time, was revised at certain locations following a final technical review. The revised final line route was published in March 2015. This revision had resulted in the local re-positioning of some of the towers along the alignment but the alignment itself did not change. A total of 16 no. landowners were affected by the resulting changes and were written to by EirGrid individually and provided with information about the change and how

- they could contact EirGrid to discuss these changes. A sample of this letter is provided in Appendix I (v) to the Appendices of Volume 2B.
- 74 Prior to the submission of the application for approval to An Bord Pleanála, EirGrid issued letters to all of the affected landowners to inform them that the application would shortly be submitted, and enclosed map(s), a *Community Update Brochure* (June 2015) and a copy of the *PCI Project Information Leaflet* (May 2015).
- 75 Following the submission of the application, EirGrid provided all of the affected landowners, with a hard copy of the Non-Technical Summary (NTS) of the EIS which included a compact disc of the complete application. The NTS was also made available to members of the public at each of the three project information centres.
- 76 EirGrid provided a complete hard copy of the planning application to each of the two main landowner representative groups, NEPPC and the CMAPC.
- 77 The outcome of the proactive and focussed approach to landowner consultation undertaken by EirGrid is documented for each phase in Volume 2B of the application. Section 7.4 presents an account of the nature of feedback that was received throughout each of the phases. Section 7.5 of Volume 2B provides an account of the responses given to issues that arose during Phases 1 and 2. This is followed by Section 7.6 which sets out the impact that landowner consultation had on the application, commencing from the re-evaluation of the project to the period prior to the submission of the application to An Bord Pleanála.
- 78 Table 7.6 of Chapter 7, Volume 2B sets out the key issues that were raised during Phase 1 of landowner engagement, where much of the engagement focussed on site-specific issues and were dealt with on a landowner-by-landowner basis by EirGrid's appointed landowner agents, ESB International and Tobin Consulting Engineers.
- 79 Table 7.7 of Chapter 7, Volume 2B presents the issues raised by landowners during Phase 2 of landowner consultation.
- 80 The impact of landowner engagement, as presented in Section 7.6 of Chapter 7 of Volume 2B, resulted in 57 no. change requests in relation to line design and access routes being submitted by individual landowners, 30 of which were incorporated by EirGrid into the final design. As previously noted, where a request for a change could not be accommodated, the reasons were outlined in the letter to the landowner and the landowner was invited to contact their designated agent if they wished to obtain further information and / or discuss.
- 81 Landowners were provided with a variety of means by which they could engage with the project team, landowner agents to influence the line design and tower positioning process.
- 82 Chapter 7 of Volume 2B, and its accompanying Appendix I, provides information documenting the process that was undertaken to engage directly with affected landowners.
- 83 Submissions and feedback received from landowners during the landowner engagement process were reviewed and considered by EirGrid and taken into account during the development of the project, including the identification of the preferred route corridor, indicative line route and in determining the final line route, including the location of tower structures.

- 84 Notwithstanding the extent of landowner engagement, and access to lands that has occurred during the development of this project, it remains the fact that a significant proportion of landowners have not granted consent to access lands. This is acknowledged at Section 1.5 of Volume 3B in terms of difficulties encountered in compiling the EIS, and in Section 3.7 of Volume 2B.
- 85 Certain landowners issued forms of authority and instructions to EirGrid to communicate only through their appointed representatives. EirGrid and their agents were thereby precluded from having direct communications with landowners who were represented by these landowner representative groups (NEPPC, CMAPC). As a consequence of this, EirGrid could only provide statutory or other formal notices relating to their lands directly to these landowners and thus EirGrid was unable to proactively contact landowners represented by these groups as part of the landowner engagement strategy for the project.
- 86 Notwithstanding this difficulty, EirGrid considers its proactive and tailored approach to landowner engagement for the North-South 400 kV Interconnection Development enabled multiple opportunities for landowners to participate in the consultation process, and to influence the detailed alignment of the proposal.

4.1.5 General Issues Raised under Consultation with Landowners

- 87 A number of recurring issues were raised in relation to consultation with landowners and these were identified under the following sub-headings and are responded to thereafter.
- Approach adopted towards consultation with landowners
 - Meetings with landowner representative groups;
 - Construction access and access to lands for survey;
 - Line design and assessment of change requests; and
 - Land ownership and property registrations.

4.1.5.1 Approach Adopted towards Consultation with Landowners

- 88 Some of the submissions stated that EirGrid had persisted in refusing to recognise that over 95% of all affected landowners oppose the planning application. It was stated by some landowners that they felt harassed by EirGrid and its agents and that the approach adopted had been heavy handed and / or had not shown respect towards landowners.

Applicant's Response:

- 89 EirGrid's objective was, and is, to minimise disturbance to current land use and farm management practice and, consequently, EirGrid adopted a proactive approach to landowner engagement for the project. The approach adopted sought to listen to the views and concerns of landowners so that these could be taken on board as the development progressed. The approach to landowner engagement was informed by feedback received from the public and landowners on the previous application for approval and sought to engage with landowners within defined terms of reference and parameters, as set out in Chapter 7 of Volume 2B of the planning application and in **Section 4.1.4** of this report.

4.1.5.2 Meetings with Landowner Representative Groups

90 A large number of submissions stated that EirGrid's refusal to meet with landowners has resulted in what they believe to be a lack of understanding of the terrain and ground conditions of the landholdings and study area proposed. An issue frequently raised within submissions was that EirGrid had been unwilling to meet with landowners as a group and /or with their representative groups such as the NEPPC and the CMAPC.

Applicant's Response:

91 EirGrid's preference is to engage directly with landowners with respect to their landholding. Notwithstanding that, EirGrid has always remained open to meeting with landowners and their appointed legal representative so that a meaningful engagement, and discussion of their specific issues, can take place.

92 Notwithstanding this, throughout the consultation process, EirGrid has engaged with the committees of both the NEPPC and the CMAPC and has responded to issues raised by them, both during responses provided in writing via email exchanges and during meetings with committee members.

4.1.5.3 Requirement for Construction Access /Access for Survey

93 Many of the submissions received raised issues in relation to consultation by EirGrid concerning proposed construction access to their lands. Some of the submissions reviewed expressed dissatisfaction towards EirGrid for either not having been consulted at all regarding proposed construction access arrangements or that information had been provided to them too late in the process, or not at all. Some submissions felt that EirGrid had only corresponded with landowners as a means to enter their lands for survey. One submission raised a specific query that related to a flyover survey undertaken by EirGrid and how it had taken place without consent of the landowner.

Applicant's Response:

94 With the identification of the preferred line design and publication as part of the *Preferred Project Solution Report* in July 2013, a sufficient level of detail was available so that EirGrid and its consultants could engage with landowners with respect to associated construction works and activities along the specific route alignment. Detail of the construction considerations were outlined in Chapter 5 of the *Preferred Project Solution Report*, published by EirGrid in July 2013. This report was subject to an eight-week focussed period of public consultation, during which the views from the public and landowners on proposed construction access routes was sought, including feedback on construction and access routes methodology. As part of this eight-week period of public consultation, public open days with venues and dates were advertised. The project information service and information offices operated as advertised throughout this phase and afforded a forum by which landowners could obtain details regarding proposed access arrangements, discuss these arrangements and provide their feedback.

95 Landowner engagement included requests to access lands for survey as outlined in the *Preferred Project Solution Report* and in correspondence issued to landowners.

96 Plans by EirGrid to conduct a LiDAR aerial survey of potentially affected lands were advertised in advance on local radio and in regional newspapers. Landowners who contacted EirGrid's project information service (either by email, in writing or by phone) were provided with further information regarding the purpose and date of the survey so that they could make advance arrangements to house their animals.

4.1.5.4 Line Design and Assessment of Landowner Change Requests

97 Some of the submissions received from affected landowners stated issues in relation to communication and / or the assessment of change requests by EirGrid.

98 Many submissions referred to the issuance of correspondence to affected landowners coincided with the finalisation and publication by EirGrid of the final line route mapping in December 2013. Issues were raised by some landowners regarding the subsequent publication of different maps in March 2014, whereby a number of changes had been made. It was suggested that these changes had been made without any prior consultation with affected landowners.

Applicant's Response:

99 The process by which change requests were considered by EirGrid and the project team is set out in Sections 7.3.3.1 and 7.3.3.2 of Volume 2B.

100 The guiding principles for the overhead line design, tower positioning and the identification of access routes used by EirGrid were outlined in the *Landowner Information Brochure* provided to all landowners. Section 7.3.3.2 of Volume 2B, describes the process as to how EirGrid considered and assessed any change requests that were received. Further details of the assessment of suggested design changes made by landowners were provided in the *Preferred Project Solution Report*, which was made available to landowners at open days and via the project information service.

101 As set out in Section 7.3.3.2 of Volume 2B, a balanced judgement was made for each change request received from landowners based on technical, environmental, landowner and other considerations. Each landowner was then issued a letter which informed them of the outcome of this process i.e. whether their submitted request could be accommodated, or not, and set out reasons for same in correspondence along with contact details of their landowner agent from whom they could obtain further information or discussion.

102 All change requests received were assessed and their outcome notified to the landowner.

103 In March 2015, EirGrid published the line route which forms the basis of the application for planning approval to An Bord Pleanála and which followed a final technical review of the December 2013 line design. The review resulted in some tower locations being locally re-positioned along the alignment. The alignment itself has not changed. The owners of the landholdings affected by these changes were notified in advance. Maps showing the proposed line route in the Meath study area and the Cavan Monaghan study area were made available, and remain available, for viewing on the project website.

4.1.5.5 Land Ownership and Property Registrations

104 Some of the submissions stated that they had never been contacted or consulted with by EirGrid despite them being the legal owners of the lands affected.

Applicant's Response:

105 EirGrid devised a focussed approach to landowner engagement for each stage of the project as summarised above and outlined in detail in Volume 2B of the application documentation, and was supported by the overall public consultation process undertaken for the project. The objectives of this engagement were to meet with each landowner, discuss their feedback on the proposal and also to confirm details of ownership.

106 Landowners were identified by EirGrid and its landowner agents through searches of the Property Research Authority of Ireland (PRAI), coupled with site verification. It was not always possible to make contact with landowners, despite various attempts being made. Some landowners stated that all correspondence should be in writing, or through an appointed representative, and consequently meetings and phone calls with such landowners were not possible.

107 In this difficult context, every effort was made by EirGrid and its landowner agents to identify, locate and engage with all landowners along the proposed route.

4.1.6 Other General Issues Arising

4.1.6.1 Differences in Approach to Consultation Compared with other Grid25 Projects

108 Issues relating to the approach that EirGrid had adopted regarding public consultation on the North-South Interconnector compared with its other Grid25 projects, including the Grid West and Grid Link projects, was raised in many of the submissions reviewed. In this regard, it was stated by some observers how they felt the approach taken had discriminated against the people of the North-East and / or that they hadn't been afforded the same opportunities for public consultation compared to other Grid 25 projects.

Applicant's Response:

109 Public consultation on the North-South 400 kV Interconnection Development was similar in scale and scope as those for the Grid West and Grid Link Projects. The difference in methodologies adopted is addressed further in **Section 4.2** (Project Methodology).

4.1.7 Response to Specific Issues raised in Observer Submissions

4.1.7.1 North East Pylon Pressure Campaign (NEPPC) (SI-2015-0278)

110 The submission made by the NEPPC felt that EirGrid had decided to ignore the whole Grid25 review process and had submitted its 'Concept of Public Participation' to An Bord Pleanála with inclusion of activities that related to the original planning application, although that application was null and void.

- 111 It was considered that the dual role of the Board as statutory planning and consent granting body and competent authority for PCI raises challenges at public perception and understanding level.

Applicant's Response:

- 112 As required under the governing regulations for PCI developments at pre-application stage, EirGrid submitted its report '*Concept for Public Participation*' (ABP Ref: PCI0001) to An Bord Pleanála. This set out the concept and guiding principles on which all consultation for the project is based; the chronology of consultation events that took place and how the process complies with EU regulation No. 347/2013. This document was modified by the Board regarding the production of a PCI leaflet and the advertisement in national papers of the PCI leaflet, the scope and status of the project as a PCI and indicative date for lodgement of the planning applications. This was carried out by EirGrid.
- 113 The PCI Public Information Leaflet produced by EirGrid in May 2015 was published on its website, made available to the public via the project information service (where it was available for viewing in hard copy in each of the three EirGrid project information centres) and on request to those who requested a hard copy. A copy of the PCI leaflet was provided in a mail-out to all affected landowners and to stakeholders in June 2015 (over 2,000 correspondences).
- 114 For further information and responses in relation to the PCI process, please refer to **Section 2.1.9** of this report. It is however, noted that it is somewhat unique to commence this PCI process, including submission of a 'Concept for Public Consultation', at such a mature stage in the preparation of the application. This, however, is required to ensure compliance with the governing Regulations for PCI projects.

4.1.7.2 County Monaghan Anti-Pylon Committee (SI-2015-0278)

- 115 In the submission made by the CMAPC (SI-2015-0278), reference to the *Concept of Public Participation* document (July 2014) was made and CMAPC questioned why the final route maps of December 2013 were taken down from EirGrid's website and replaced with ones with tower positions changed. The committee states in its submission that:

"It must be noted that the final design of December 2013 has been totally removed from the website. This is not in keeping with the PCI process where a full record of all historical documents must be maintained. We note that An Bord Pleanála made the developer put the December 2013 Community Update Newsletter back up on the website, to ensure compliance with PCI regulations. We now have no idea of the full extent of tower movements in the CMSA, which took place in the absence of any consultation whatsoever".

- 116 The submission made by the CMAPC made reference to the PCI process and statement by then Minister for Communications, Energy and Natural Resources that the PCI process would lead to enhanced openness, transparency and consultation. CMAPC states that *"it has done none of these things and regardless what the intentions were, it has been subverted into another useless tick box administrative exercise"*.
- 117 CMAPC's submission considered that the process has *"allowed EirGrid to correct their mistakes on an ongoing basis and submit at least two incarnations of the planning*

application to ABP for scrutiny before the final one is lodged". CMAPC referred to what it calls the "leaking online of the draft planning application from ABP website".

- 118 CMAPC's submission states that "*all in all the PCI process was another dismal failure with regards to consultation*".

Applicant's Response:

- 119 It is submitted that EirGrid complied with all of its obligations and requirements during the course of the PCI pre-application process.

4.2 PROJECT METHODOLOGY

4.2.1 Overview

- 120 Project Methodology was raised as an issue in approximately 192 no. of submissions / observations. These submissions are listed in Table 11 of **Appendix 1.2** of this report.

- 121 Project Methodology covers issues relating to the evolution of the planning application for the proposed development. A breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 12 of **Appendix 1.2** of this report.

4.2.2 Response to General Issues Raised

4.2.2.1 Overall Project Methodology

- 122 The topic of Project Methodology covers a wide range of issues which generally relate to the background / evolution of the route corridor and line design and application, details of which are recorded, and evaluated where appropriate, throughout the application documentation including the EIS.

- 123 The Planning Report (Volume 2A) of the application documentation) presents the planning issues associated with the proposed development. Chapter 2 of the Planning Report provides a description of proposed development including project development, planning history and description of line route, an outline of the overhead line (OHL) elements, works to the existing Woodland Substation and construction related works, ancillary elements and construction methodology.

- 124 Chapter 1 'Introduction', Volume 3B of the EIS sets out the context for the proposed development (Section 1.1), requirement for EIA under EU and national legislation (Section 1.2), preparation of the EIS (Section 1.3), structure and content of the EIS (Section 1.4) and difficulties arising during the preparation of the EIS, including lack of access to land (Section 1.5).

- 125 Chapter 3 'Scoping the EIS' of Volume 3B, outlines the background of the proposed development, including the previous application for approval and the re-evaluation process (Section 3.2), EIS scoping and associated consultation (Section 3.3) and findings of the informal scoping and consultation process (Section 3.4)

- 126 Chapter 4 'Transmission and Technology Alternatives', Volume 3B, outlines the main transmission and technology alternatives considered by the respective applicants to the identified need for the proposed development, including the 'Do-nothing' alternative (Section 4.2), strategic need (Section 4.3), alternatives to transmission network solutions (Section 4.4), project objectives / design criteria (Section 4.5), specific studies commissioned by the respective applicants on alternative transmission technologies (Section 4.6), transmission technology alternatives considered for the proposed development (Section 4.7) and overhead line (OHL) design considerations (Section 4.8).
- 127 Chapter 5 Route Alternatives, Volume 3B, outlines the main alternatives considered in the process of identification of the route alignment of the proposed development, including Phase 1: Identification of broad study area(s) for the proposed development (Section 5.2); Phase 2: Identification of alternative route corridor options and a preferred route corridor for the proposed development (Section 5.3); identification of a preferred line design (Section 5.4) and final line design (and certain associated development) for the proposed development (Section 5.5).

4.2.2.2 Re-evaluation Process

- 128 A number of submissions raise issues regarding the re-evaluation process. In particular the submissions criticise the whole re-evaluation process and allege that the proposed development is in fact the same project as that previously withdrawn in 2009.
- 129 Details of the re-evaluation process are set out in Section 2.1.2 of the Planning Report, (Volume 2A) and Section 3.2.2, Chapter 3 of Volume 3B of the EIS. In addition it is summarised in Section 2.1.2 of the Non-Technical Summary (Volume 3A) of the EIS.

Applicant's Response:

- 130 Details of the re-evaluation process are set out in Section 2.1.2, Volume 2A and Section 3.2.2, Chapter 3 of Volume 3B. In addition it is summarised in Section 2.1.2 of the Non-Technical Summary (Volume 3A).
- 131 As addressed in detail in the application documentation, following the withdrawal of the previous application to An Bord Pleanála for approval of the development (ABP Ref. VA0006) in 2010 EirGrid undertook a comprehensive re-evaluation process in respect of the proposed development (undertaken between 2010 and 2013). It is submitted that the re-evaluation process included a comprehensive review of the previous application in order to ascertain whether the identified need, scope, alternatives considered (including technology alternatives), content and conclusions of that previous application remained applicable for the purposes of informing and shaping this new application for approval.
- 132 EirGrid's re-evaluation of the project commenced shortly after withdrawal of the previous application. It comprised a structured process that combined technical and environmental analysis and re-appraisal of various issues, with opportunities for landowner, public and stakeholder engagement – this is set out in more detail in the *Public and Landowner Consultation Report* (Volume 2B).
- 133 As part of the review process, EirGrid published a *Preliminary Re-Evaluation Report* in May 2011 which concluded with the identification of an 'Indicative Line Route' within an emerging 'Preferred Route Corridor'. EirGrid also considered a number of documents published since the publication of the *Preliminary Re-evaluation Report*, which are relevant to the overall re-evaluation process including *inter alia Meath-Tyrone Report Review* by the

International Expert Commission August – November 2011, January 2012; *Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure*, July 2012. The conclusions of these documents, and of feedback received in respect of the *Preliminary Re-evaluation Report*, were set out in a *Final Re-evaluation Report* published in April 2013. The *Final Re-evaluation Report* concluded with the identification of an 'Indicative Line Route' for the transmission circuit within an identified 'Preferred Route Corridor' to be located in counties Monaghan, Cavan and Meath.

- 134 The re-evaluation process concluded with the identification of a preferred solution presented in the *Preferred Project Solution Report* published in July 2013 to meet the strategic and technical need for the project. The *Preferred Project Solution Report* was subject to public consultation, with a focus on landowner engagement particularly in respect of the specific siting of structures on lands. The ultimate output of this process is the line design of the proposed development, which is the subject of this application for planning approval.
- 135 The development of this project has therefore occurred in a structured and transparent way, following a series of stages or steps, and combining technical and environmental work with landowner, stakeholder and general public engagement and opportunities for public participation in decision-making.

4.2.2.3 Differences between Grid West / Grid Link Projects and North-South

- 136 A number of submissions raise issues regarding the differences between the Grid West and/or Grid Link projects and the North-South project, in particular in relation to the issue of undergrounding. The submissions query why undergrounding was not considered as an option for the proposed North-South project.

Applicant's Response:

- 137 Firstly, the option of undergrounding was in fact considered for the proposed North-South Interconnection development, as is clearly documented throughout the application documentation including the EIS. By way of example, the Board is referred to Sections 2.1 *Project History and Development* (specifically Sections 2.1, 2.13) and Section 5.3 *Consideration of Alternatives* of the Planning Report (Volume 2A); Section 4.7.3 *Partial Undergrounding of AC Transmission Circuits* of Volume 3B of the EIS and Appendix 5.1 *The Potential for Partial Undergrounding of the Line to Mitigate Significant Impacts on the Landscape* of Volume 3B Appendices. The underground alternatives considered and the topic of partial undergrounding are also summarised in Sections 3.1.2 and 3.1.3 of the Non-Technical Summary (Volume 3A) of the EIS.
- 138 In January 2014 the Minister for Communications, Energy and Natural Resources appointed an Independent Expert Panel (IEP) to oversee and facilitate a comparative analysis of underground and overhead alternatives for the Grid West and Grid Link projects. In addition, the IEP was tasked with providing an opinion to the Minister on the compatibility of the methodologies to be employed on the Grid West and Grid Link projects with the methodology of the extant proposal in respect of North South 400 kV Interconnection Development.
- 139 In July 2014 the Panel, (comprised of Mrs Justice Catherine McGuinness, Chairperson, Professor Keith Bell, Professor John Fitzgerald, Dr. Karen Foley and Mr. Colm McCarthy) provided its opinion on the matter and this has been published by the Department of Communications, Energy and Natural Resources. The IEP is of the opinion that the work

completed to date on the North-South 400 kV Interconnection Development is compatible with the Terms of Reference to be employed on the Grid West and Grid Link projects:

“Having considered and discussed all of the material, the Panel is unanimously of the opinion that, in all material respects, what has already been done on the N/S project is compatible with the methodologies now being employed on the GW and GL projects. While the Panel acknowledges that no two grid infrastructure projects are identical, and that some non-comparabilities are likely to arise when assessing the potential environmental impacts, technical efficacy and cost factors, the Panel is of the opinion that no material differences in the methodologies arise.”

140 With the agreement of the Department of Communications, Energy and Natural Resources (DCENR) EirGrid has published the report which it submitted to the IEP in relation to the proposed North-South 400 kV Interconnection Development. This report entitled Report to the Independent Expert Panel Date: 29/05/2014 & Addendum Date: 19/06/2014 is included as Appendix 3 of Volume 2A.

141 More recently, on 8th October 2015, the Panel confirmed that it had provided its final report to the Minister. Item 8 of the final IEP report states:

*“The Panel provided an opinion to the Minister on the compatibility of the methodologies employed on the Grid Link and Grid West projects with what had already been done on the North South Transmission Line project. **The Panel was unanimously of the opinion that, in all material respects, the methodologies employed on the North South project, were compatible with those that were to be employed on the Grid Link and Grid West projects.**”* [Emphasis added]

142 Notwithstanding the statements made in submissions / observations received by the Board, the final report of the IEP clearly demonstrates that the methodologies employed in relation to the proposed North-South 400kV Interconnection Development were considered by the Independent Group to be compatible to those employed on the Grid Link and Grid West projects and as such the same level of consideration was afforded to each of the EirGrid projects regardless of their location.

4.2.2.4 Line Design

143 A number of submissions raise queries and concerns about the line design process and the constraints and considerations which influenced the final alignment.

Applicant's Response:

144 The line design presented in the application for approval is the output of a robust and phased design process as described in Chapter 5 of Volume 3B. In Section 5.4.2.1, EirGrid identifies the main routing principles (focusing on technical, environmental and landowner consideration) which guided the line design process for the proposed development. The principles are:

Technical Routing Considerations

- The minimum clearance for a 400 kV OHL shall be 9m over ground and 10m over major roads / railways. Clearance over canals / navigable waterways shall be 14.7m minimum.

- EirGrid's line design standard requirements and technical limits of existing tower designs include inter alia a requirement to achieve the appropriate span length for the kV (i.e. the maximum span length at 400 kV is 500m; however the average is 350m).
- Avoid sharp changes in direction in the line (or Angle of Deviation (AOD)) and minimise the number of angle towers required, where possible.
- Minimise the number of crossings of other power lines, railway lines, roads and other infrastructure.
- Tower foundations should be located in stable flood free environments with minimal erosion to avoid excessive costs related to highly reinforced or piled foundations and for long term maintenance access.

Environmental Considerations

- On the grounds of general amenity, where possible EirGrid will avoid routing overhead transmission lines close to residential areas.
- With respect to individual houses, EirGrid will seek to maximise distances between OHL and existing dwellings and specifically, where possible, to achieve a lateral clearance of at least 50 metres from the centreline of the proposed development to the nearest point of dwellings.
- Avoid known ecologically sensitive areas (e.g. cSAC / SAC / pNHA / NHA /SPAs) where possible.
- Sites of potential ecological importance (e.g. hedgerows and wetlands) shall be assessed via on-site survey. Where such surveys are not possible overhead towers should be sited away from the potentially sensitive areas and into adjoining managed agricultural fields where the ecological sensitivity is low.
- Cause least disturbance and minimise impacts to identified natural heritage interests (including watercourses).
- Avoid major areas of highest amenity value and deviate around areas of lesser amenity value, where possible.
- Integrate the line within the landscape, where possible including inter alia: utilising natural background and foreground features to visually absorb towers (e.g. hills, forests, vegetation etc.); avoiding axial views, breaking the skyline and a concentration of 'wirescape' (arising from proximity to lower voltage or telephone lines); maintain uniformity of tower heights where possible, etc.
- When crossing a flat landscape characterised by a large visual field, poor complexity and a clear organisation of land pattern, it is preferable to use higher towers with longer span lengths (to match the simplicity of the landscape).
- Cause least disturbance to and minimise impacts to cultural heritage interests.

Landowner Considerations

- Minimise disturbance to current land use and farm / land management practices.
- Consult with landowners throughout the various stages of the design.
- Gather inputs from landowners on their farm practices and suggested locations for towers.

- 145 Having regard to the foregoing, EirGrid contends that:
- The line design of the proposed development for which approval is sought from the Board presents the best solution having regard to competing environmental, technical and social constraints within the study area.
 - The proposed alignment is an optimised design which minimises the number of towers located within the line straights.
 - The line design incorporates movement requests from environmental specialists and landowners, as appropriate.
- 146 **Section 5.4.1** of this report provides a detailed response to requests from observers to alter the line route in respect of particular locations.

4.2.2.5 Separation Distance

- 147 A number of submissions consider that the recommended lateral clearance of at least 50 metres from the centreline of the proposed development to the nearest point of dwellings should be measured from the outer boundary of a residential property. Other submissions consider the maps flawed as they have been measured from the conductor to nearest point of the existing residential properties, whereas they should have been measured from conductor to outer curtilage of properties or boundaries of private open space.

Applicant's Response:

- 148 In respect to individual houses, EirGrid will seek to maximise distances between OHL and existing dwellings and specifically, where possible, to achieve a lateral clearance of at least 50 metres from the centreline of the proposed development to the nearest point of dwellings.
- 149 The distance is usually measured from the centre of the line infrastructure. This guideline is not based on electrical or mechanical clearance but rather for residential amenity purposes. In the vast majority of cases the minimum distance is greatly exceeded however, at a small number of pinch points where there is a fine balance to be struck between the competing environmental, technical and social constraints, the separation distance can be reduced to the minimum.
- 150 In the context of considering residential amenity, it is standard practice to measure distances from the boundary of a proposed development to the nearest point of an existing building façade. This is reflected in policies and development management standards relating to amenity in respect of the following issues: aspect, privacy, sunlight and daylight.

4.2.2.6 Changes to the 2009 Line Design

- 151 A number of submissions allege that the proposed line design is in fact the exact same as that previously withdrawn in 2009.
- Applicant's Response:***
- 152 Chapter 5 of Volume 3B sets out the evolution of the current proposed alignment and that the alignment which had formed the subject-matter of the previous application for approval submitted in 2009 had been re-evaluated.

- 153 The re-evaluation process has allowed EirGrid to conclude with confidence that the original studies and conclusions remained appropriate as the foundation for identification of the proposed route for this current application. However, it is incorrect to state that the 2015 application is the same as the 2009 application. Rather, the current proposed alignment incorporates a number of modifications to the alignment proposed in 2009.
- 154 **Final Re-evaluation Report (April 2013):** The indicative line route identified in the *Re-evaluation Report*, was acknowledged to be broadly similar to the previously proposed line route but incorporated localised modifications as follows:
- Modifications to the line route in order to take account of the construction and granting of permission for new houses occurring since the preparation and submission of the previous application in December 2009.
 - Modification arising as a result of the decision not to proceed with the intermediate substation (in the area to the west of Kingscourt).
 - Modifications arising from technical and environmental considerations during the re-evaluation process (many of these become only became apparent in the line design presented in the *Preferred Project Solution Report*).
- 155 **Preferred Project Solution Report (July 2013):** The preferred line design identified in the *Preferred Project solution Report*, provided more detail on the localised modifications to the 2009 planning application, and specifically outlined how consideration of feedback from stakeholders and landowners fed into the process. Modifications to the 2009 line design included:
- Introduction of a single point of transposition between towers 119 and 122.
 - Siting towers away from sites of potential ecological importance (including hedgerows and wetlands) and into adjoining fields.
 - Modifications in several locations to maximise the lateral clearance from the centre of the proposed line route to the nearest point of dwellings.
 - Modification of line route to avoid the Cashel Bog complex.
 - Modification of the line route in the townland of Terrygreeghan to maximise the distance to a dwelling permitted planning in 2011.
 - Modification of the line route in Brackley (by Cremorne) to avoid a semi natural wetland complex.
 - Modification of the line route in proximity to Brittas Estate in order to reduce the impact on the setting of the designed landscape, parkland and setting of Brittas House and reduce potential ecological impacts.
 - Modification of the line route in Dunderry in light of the amenity value of the area and in particular that of the Shamanic Healing Centre.
 - Landowner feedback including requests to place towers on field boundaries, in the corner of a field, at a distance to existing farm buildings or closer to the existing roadways within the landholding etc.
- 156 **July 2013 – June 2015:** As noted in the *Preferred Project Solution Report* the preferred line design identified in that report provided the focus for further landowner engagement, particularly in respect of the specific siting of structures on lands, as well as further environmental survey, design and assessment, in consultation with prescribed bodies, other stakeholders and members of the public. Localised alterations to the preferred line

design continued to be considered if they could be accommodated without creating additional impact.

4.2.2.7 Wayleaves and Planning Consent

157 The asserted objection in relation to wayleaves falls to be disposed of similarly. This objection also relates to the implementation of any planning approval which may be granted. It is not relevant to the determination of the present application. Equally irrelevant are matters raised in the submissions concerning wayleaves in respect of other EirGrid projects and alleged discrepancies between the scope of the wayleave and the planning consent for such project.

158 That said, the proposed transmission infrastructure will be constructed by the Electricity Supply Board (ESB) pursuant to its statutory powers. These include the power of ESB to serve a wayleave notice under section 53 of the Electricity (Supply) Act, 1927 and its authority to enter lands in the circumstance set out in that section.

4.2.3 Response to Specific Issues raised by Prescribed Bodies

4.2.3.1 Cavan County Council (SI-2015-0214)

159 Cavan County Council's submission states "*It is unclear from the dwellings submitted where the 400 kV is in proximity to occupied dwellings in Co. Cavan*".

Applicant's Response:

160 The suite of statutory 1:2,500 drawings submitted to the Board identifies insofar as possible all the occupied dwellings within 200m of the overhead line (which are delineated on the maps with the distances measured to the occupied dwellings). Geo directory data was sourced from An Post to identify all dwellings within the study area. The geo directory data may not be correct for all locations depending on where the registered point of house is taken by An Post and in some cases a house may no longer be extant. New dwellings may also not always be captured. However, EirGrid and its consultants have endeavoured to cross check by site verification whether any occupied dwellings were omitted from the application drawings and these locations were also registered on the maps with distances to the overhead line.

4.2.4 Response to Specific Issues Raised by Observers

4.2.4.1 Monaghan Anti-Pylon Committee (SI-2015-0278)

161 The submission states "*it does not matter one iota whether there were 3 overhead routes picked for consultation in Cavan/Monaghan or ten routes or twenty routes, the fact was that the only one border crossing point at Lemgare was considered. All routes led to this fixed point and so in reality there was no realistic route outside of Monaghan that could be chosen.*"

Applicant's Response:

162 Section 5.2 of Volume 3B outlines the background to the identification of the broad study area for the second interconnector. A number of options were considered before the Mid-

Country Option (which includes County Monaghan) was identified as the preferred area within which to route the proposed interconnector. The approximate location of the border crossing point was identified during feasibility studies of the broad study area alternatives. Specifically in NIE and ESBNG's 2005 Report *Drumkee – Kingscourt 275kV Feasibility Study (South of the Border)* it is stated in respect of the Border Crossing Point:

"The border crossing point was agreed by creating constraint maps for both sides of the border and based on a co-operative effort with Northern Ireland Electricity, the border crossing point was located in the vicinity of Mulyard, East of Clontibret. Care must be taken on the southern side of the border to avoid the site of the battle of Clontibret. To the north of this crossing routing becomes difficult due to the very dense drumlins and one off housing."

163 It is clearly evident that the border crossing point is fundamentally determined by constraints both north and south of the border.

164 In conclusion, the reasons for routing the proposed line through County Monaghan and the location of the border crossing point were clearly part of EirGrid's thorough consideration of alternative routes for the proposed second interconnector.

165 Furthermore, the re-evaluation process undertaken between 2011 and 2013 included a re-evaluation of the study area, route corridors and line route. As reported in the *Final Re-evaluation Report* in April 2013, and as described in Section 5.2.4, Section 5.3.3 and Section 5.4.1.2 of Volume 3B, it was concluded that no new significant environmental or other constraints had arisen since the previous application in 2009, which would result in any substantial change to the previously identified study area, route corridor or indicative alignment within County Monaghan.

4.2.4.2 Mr. James and Mary McNally (SI-2015-0091)

166 The submission queries why the line route varies or changes direction from Tower 126 to Tower 103. Moreover, the submission states that: *"In choosing this kinked route, EirGrid has come close to Tassan Lough pNHA, Tassan mines pCGS, crossed over protected species of rare orchids in the Tassan grasslands, impacted on drumlin topography in Latnakelly and Annaglough, oversailed the Monaghan Way Walk"*

Applicant's Response:

167 The main routing constraints in this area relates to dispersed rural housing, the identified site associated with the battle of Clontibret and the area of higher ground in the Crossmore area. Whilst the full extent of the area associated with the battle of Clontibret is not defined or protected, there is an area west of Clontibret with an information board about the battle, which provides a focal point. In this context it was considered that the line should avoid the area. Additionally, the area to the north around Crossmore has a marginally higher underlying elevation than the Tassan and Derryhallagh areas. Routing the line in these areas takes advantage of the slightly lower topography.

4.2.4.3 Trevor and Linda Field (SI-2015-0065)

168 The submission states that *"..EirGrid are now putting the line right between our new house and my mother's farm house and yard. There is also an enormous angle pylon in one of her*

small fields this side of the road. My mother tried to get it moved at least to the far side of the road but EirGrid wouldn't do it..."

Applicant's Response:

- 169 As noted by the observer, Tower 142 is an angle tower. An alternative location was considered by EirGrid, however, the current location is considered the optimum solution. Moving the tower would have implications for two line straights bringing the OHL nearer to other environmental constraints in the area.

5 ALTERNATIVES

5.1 OVERVIEW

- 1 Alternatives were raised as an issue in approximately 697 no. of submissions/observations. These submissions are listed in Table 13 of **Appendix 1.2** of this report.
- 2 The consideration of the alternatives to the proposed project is a large topic area; however, it was possible to identify a number of recurring issues. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues are listed in Table 14 of **Appendix 1.2** of this report.

5.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Alternatives is evaluated in Chapter 5.3 of the Planning report (Volume 2A of the application documentation), Chapter 3 of the Non-Technical Summary, (Volume 3A), Chapters 4 and 5 of Volume 3B of the EIS and the non-technical summary of the Joint Environmental Report Volume 4. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to the issues raised by the observers.
- 4 Chapter 4, Volume 3B of the EIS outlines the transmission and technology alternatives for the proposed development including the 'Do-nothing' alternative (Section 4.2), strategic need (Section 4.3), alternatives to transmission network solutions (Section 4.4), project objectives / design criteria (Section 4.5), specific studies commissioned by the respective applicants on alternative transmission technologies (Section 4.6), transmission technology alternatives considered for the proposed development (Section 4.7) and overhead line (OHL) design considerations (Section 4.8).
- 5 Chapter 5, Volume 3B of the EIS outlines the route alternatives for the proposed development including Phase 1: Identification of broad study areas for the proposed development (Section 5.2), Phase 2: identification of alternative route corridor options and a preferred route corridor for the proposed development (Section 5.3), identification of a preferred line design (Section 5.4) and final line design for the proposed development (Section 5.5)

5.2.1 Consideration of Alternatives

- 6 The main issue raised in submissions was that either alternative option should be considered and/or that certain alternatives had not been considered. The suggested alternatives in the submissions referred to both technological and routing options. Some submissions included alternative technologies most notably underground cabling using either AC or DC technology, use of superconductor, Gas Insulated Lines (GIL), and High Temperature Low Sag (HTLS) conductors (wires). In addition to the response below it should be noted that undergrounding is discussed in more detail in **Section 5.2.4**.
- 7 The repeated question and issues that were raised could be summarised as:
 - Other alternative options should be considered?

- Transmission technology development options were not considered as an alternative by EirGrid including gas insulated lines, superconductors and others?
- We are different to other countries which have ceased erecting overhead pylons?
- EirGrid has no will to overcome undergrounding issues?
- Proceeding with outdated technology?
- New technology development would make it possible to use this before this line is finished?

Applicant's Response:

8 A response is provided to each of these questions as outlined below:

Other alternative options should be considered?

9 The main technological and routing alternatives are comprehensively discussed in Chapter 4 and 5 of Volume 3B of the EIS. This includes an explanation of the studies that EirGrid has commissioned, undertaken itself or has taken into account in determining the technological and routing alternatives.

10 The main technological alternatives are detailed in chapter 4 of Volume 3B of the EIS. The introduction sets the objective of the chapter as:

'This chapter sets out the context in which the main alternatives were considered by EirGrid for the proposed development and an indication of the main reasons for the final project chosen, taking into account the effects on the environment. It outlines the main transmission and technology alternatives considered by the respective applicants to meet the identified need set out in Chapter 2 of this volume of the Environmental Impact Statement (EIS).

Transmission technology development options were not considered as an alternative by EirGrid including gas insulated lines, superconductors and others?

We are different to other countries which have ceased erecting overhead pylons?

EirGrid has no will to overcome undergrounding issues?

Proceeding with outdated technology?

11 In Section 5.2 of Chapter 4 of Volume 3B of the EIS, the project objectives and design criteria are discussed. In paragraph 44, it is clearly stated that the design criteria for the project must ensure good utility practice, be cost effective and comply with reliability and security standards. This section also states that good utility practice for technology selection is defined by the methods used by 41 Transmission System Operators from 34 Countries that are members of ENTSO-E (European Network of Transmission System Operators for Electricity).

12 Appendix 4 in the ENTSO-E's Ten Year Network Development Plan describes the outlook and prospective for transmission technologies. The appendix outlines those technologies which are available or are expected to be become available for transmission development within the lifetime of the 10 year plan. It also confirms that the consideration of the main alternative technologies, referred to in submissions/observations received by the Board, such as Alternating Current (AC) and Direct Current (DC) underground cable (UGC), are technologies that would be considered for projects. Another technology, Gas Insulated Lines (GIL), is referenced in certain submissions/observations received by the Board. In Appendix 4, this technology is viewed by ENTSO-E as justifiable for niche applications

where existing infrastructure is present, such as tunnels or bridges, where this type of technology can be laid. This limited application is due to strong environmental concerns, multiples of the cost to other technologies and the need to develop a track record of successful deployment of projects within Europe.

New technology development would make it possible to use this before this line is finished?

- 13 The appendix does not include other technologies mentioned in submissions, notably the use of superconductor circuits or wireless transmission. These technologies are not considered by ENSTOE to become available for transmission development within the 10 year plan and have not been considered as alternatives for this proposed project.

5.2.2 Use of Existing Ireland to Northern Ireland Interconnection

- 14 The main issue raised in submissions was that either modification of the existing interconnector to allow for increased capacity should have been considered as an alternative option and/or was not considered. Some submissions referenced technologies that should have been considered as alternatives, including the use of HTLS conductors and series compensation.

Applicant's Response

- 15 The need for another high capacity interconnector to work in tandem with the existing interconnector, principally to prevent system separation, is detailed in Chapter 2 in Volume 3B of the EIS and clarified further in **Section 3** of this report. The context of using/modifying the existing interconnector between Ireland and Northern Ireland to resolve the need is also further explained in this response in **Section 3**, paragraph 48 above.
- 16 In summary, modification of the existing interconnection (to increase its rated capacity or otherwise) using any technology does not resolve this need as a loss of this existing interconnector will cause system separation. Accordingly, that option was not and is not a realistic alternative and is not included in the EIS in that context.

5.2.3 Use of Other Existing Interconnectors

- 17 Submissions state that the use of the existing East-West Interconnector (EWIC) or Moyle interconnectors should have been an alternative option and/or was not considered. Some submissions referenced specific use of the existing EWIC converter station at Woodland to reduce the scope of an alternative HVDC (High Voltage Direct Current) solution for the proposed interconnector between Ireland and Northern Ireland.

Applicant's Response

- 18 The need for another high capacity interconnector to work in tandem with the existing interconnector is detailed in Chapter 2 in Volume 3B of the EIS. The context of using existing interconnectors to resolve the need is explained in the response in section 3, paragraph 50 above.
- 19 In summary, the use of the existing East-West Interconnector (EWIC) or Moyle interconnectors will not resolve this need as they do not provide a second high capacity interconnector, which would prevent the risk of system separation. Hence the expansion or

use of those two existing interconnectors is not a realistic alternative to the development of a second North-South Interconnector.

- 20 In the context of using the existing EWIC converter station at Woodland to reduce the scope of an alternative HVDC solution for the proposed interconnector between Ireland and Northern Ireland all the detailed reasons included in Chapter 4 of Volume 3B of the EIS for not using HVDC technology for the proposed interconnector should be considered. In addition, the rating of the existing EWIC converter station in Woodland is only 500 MVA and would not have sufficient capacity to meet the need of an additional interconnector. This would require the existing EWIC converter station in Woodland if possible to be expanded and modified, or alternatively replaced. At best it would still require expensive modification of the same magnitude of a purpose built converter station and at worst could prove more costly.

5.2.4 Consideration of Undergrounding Options

- 21 A significant number of submissions raised issues as to the consideration of undergrounding as a main alternative, which was either not adequately considered or not considered at all. These issues have centred around:

- EirGrid policies and approach to the selection of overhead or underground technology;
- understanding of option selection and work in other EirGrid projects;
- views and approaches of others in the industry, and;
- changes to information provided on underground technology options for this project

- 22 Some submissions queried the relevance of other perceived benefits of underground technologies. These included reduction of the impact of lightning, reduced interference with communication signals (radio, television, telephony, etc.).

Applicant's Response

- 23 The consideration of undergrounding as a main alternative is comprehensively discussed in Sections 4.7.1 for HVDC technology and Section 4.7.2.3 for AC technology within Chapter 4 of Volume 3B of the EIS.

- 24 As stated in Section 4.6.4 of Chapter 4 of Volume 3B of the EIS:

2The respective applicants have jointly carried out a comprehensive analysis of the various technological alternatives available for the proposed interconnector, over a period of many years. They commissioned a number of studies, supplemented with further internal analysis, in order to ensure that the development process was fully and properly informed with respect to the latest available technological alternatives."

- 25 All of the five specific studies detailed in Section 4.6 of Volume 3B of the EIS have examined/re-examined aspects of undergrounding technology, including technical application, viability, availability, reliability, longevity, maturity and cost.

- 26 Other key sources of information which considered undergrounding as a main alternative included the interconnector specific Ecofys study, the Independent Expert Commissions report and other third party reports. These studies and reports are referred to and summarised in Sections 4.6.1 and 4.6.2 of Volume 3B of the EIS. In addition, ongoing internal analysis within EirGrid for this and other projects has also been considered. This

has included the consideration of generic and project specific work and information related to other major projects, notably the Grid West and Grid Link projects.

- 27 All the above outlined sources of information have been used to inform EirGrid regarding undergrounding of the proposed interconnector, including the information that was used in the original proposal for the application for this project in 2009. In the intervening period since then three subsequent review reports have been carried out utilising this information and other work within this period. These reports form appendices to the EIS and are summarised in Section 4.6.3 of Volume 3B of the EIS.
- 28 Throughout this process, EirGrid has considered and re-considered the use of undergrounding technologies, and evaluated the options in line with its multi-criteria approach to technology/option selection. Therefore, EirGrid is of opinion that it has informed itself fully in respect of the available underground technologies and the best practice in their selection and use. Therefore, the selection of overhead line (OHL) technology as opposed to undergrounding technology was an informed decision.
- 29 The information used to form EirGrid's consideration of technological options is consistent with other major projects and in line with the terms of reference set out by the Independent Expert Panel (IEP). The IEP was tasked with providing an opinion to the Minister *"on the compatibility of the methodologies to be employed on the GW and GL projects with what has already been done (i.e. up to 2 May 2014, being the date the Panel decided to examine the N/S project) on the North South Transmission Line project"*. Their opinion on the matter is outlined in Section 2.1.3 of Volume 2A of the EIS and repeated below:
- "Having considered and discussed all of the material, the Panel is unanimously of the opinion that, in all material respects, what has already been done on the N/S project is compatible with the methodologies now being employed on the GW and GL projects. While the Panel acknowledges that no two grid infrastructure projects are identical, and that some noncomparabilities are likely to arise when assessing the potential environmental impacts, technical efficacy and cost factors, the Panel is of the opinion that no material differences in the methodologies arise."*
- 30 Whilst the material used for comparing options in major projects may be very similar in nature, the needs for the projects and the material itself will vary. Therefore, comparing the option selected for one project can give rise to misconceptions as to the best option for another project. This is evidenced in Section 4.7.2.4 and 4.7.2.6 in Volume 3B of the EIS with examples of the Danish approach to the use of AC cables and the rationale behind the use of the longest world-wide AC cables respectively.
- 31 Another example is the Grid West project. The final report for the Grid West project has three alternative solutions outlined. They include HVDC underground cable, AC overhead line, and AC overhead line with partial cable as a solution. These are consistent with the proposed main transmission alternatives for the North South Interconnector project. However, the need for the Grid West project is different as the proposed Grid West project will connect initially up to circa 500 MW of generation. This means that the circuit only needs be rated for that power. This permits a wider selection of transmission voltages (220 kV and 400 kV) and a capacity that can be delivered through only one cable. Therefore the final selection of the preferred technology, which has still to be made, includes not only 220 kV but partial underground solution installed in roadways.

- 32 The required capacity for the North South Interconnector project is discussed in **Section 3** paragraph 30 of this report. The required capacity means that the number of cables required and their installed layout, for either HVDC or AC undergrounding technology, would not be possible in the road networks in the region. This conclusion was summarised in chapter 2 of EirGrid's addendum to a report to the government appointed Independent Expert Panel (IEP) in Appendix 3 of Volume 2A. The addendum was accepted by the IEP as part of the information used to formulate its opinion discussed in paragraph 27 above.
- 33 Also given the voltage level required for the required capacity the technically acceptable length of an AC cable is more restricted
- 34 Another example of the solutions for one project that can give rise to misconceptions as to the best option for another project would be the recent change in preferred technology for the Grid Link project. The different needs for the two projects allows for different solutions to be suggested.
- 35 The need for the North South Interconnector project is essentially driven by the lack of network connections between the two jurisdictions. The Grid Link project need is driven by a need for an increase in power transfer capacity of the network as a whole between the south and east of Ireland including multiple of lines and circuits.
- 36 A recent review of the need of the Grid Link project, which included updated demand projections, proposed the use of a new technology to Ireland. This technology, series compensation modifies the power transferred on existing circuits, which combined with a new short marine cable circuit became a feasible option. This option was subsequently proposed as the preferable option for this project.
- 37 These examples demonstrate that EirGrid has considered and used underground cables where the technology is technically feasible and best meets the project objectives of the alternatives available.
- 38 Following consideration of the main alternatives outlined in Chapter 4 of Volume 3B of the EIS, including undergrounding alternatives, a 400 kV AC overhead line solution was chosen as the preferred option for the North-South Interconnector project. This decision was reached following consideration of the evaluation of the main alternatives against the project objectives set out in Section 4.5 of Volume 3B of the EIS and the conclusions reached and outlined Section 4.9 of Volume 3B of the EIS.
- 39 For the use of HVDC undergrounding technologies the principal reasons for not selecting this option may be summarised as the combination of its significantly higher cost and technical inferiority.
- 40 For AC undergrounding technologies, EirGrid agreed with the recommendation of the Independent Expert Commissions that this technology is not suitable and should not be utilised for the North South Interconnector project. EirGrid reached this position through the Independent Expert Commissions report findings in combination with its own separate investigations into the technology.
- 41 Some submissions have cited perceived benefits with undergrounding that need to be part of the consideration of undergrounding technologies. EirGrid believes that all relevant and/or material aspects of the alternatives have been considered within the EIS, but are often considered as part of the project objectives.

42 An example of these is the perceived benefit of underground technologies avoidance of impact from lightning. The consideration of reliability and availability of the alternatives in Chapter 4 of the EIS (and its appendixes) by default includes the impact of lightning, as well as third party damage, equipment failure rates and other factors. Similarly ensuring the impact of any interference to communication signals from any of the alternatives for the project is already considered as part of the design criteria which considers the need for compliance with relevant national and international standards in this and other regards.

5.2.4.1 Economic Appraisal of Alternative Options

43 A significant number of submissions raised issues about the cost of the main alternative undergrounding options and/or the comparison of these costs to proposed 400 kV AC overhead line. The submissions questioned the range of costs used to determine the comparable cost and the impact of life cycle costs. These questions were centred around either that capital or lifecycle costs were absent in the EIS or that all the relevant components of the cost were not included in the comparison and that this would have changed the overall costs for comparison.

Applicant's Response:

44 The consideration of the cost of the main alternatives is discussed in Chapter 4 of volume 3B of the EIS, and EirGrid believes that the concerns raised are all comprehensively covered already in the EIS and its supporting documents.

45 The response in **Section 3** above, on present value of the preferred option above should also be read in conjunction with this response. Some submissions incorrectly assert that the estimated cost of the project did not include wayleaving and access right costs.

46 Specifically the cost effectiveness of the use of HVDC technology designed either as overhead or underground is summarised in Table 4.6 of Chapter 4 of Volume 3B of the EIS and set out in more detail in the rest of Section 4.7.1 of volume 3B. This considers both capital and life cycle costs. The comparison of the cost effectiveness of HVDC technology to the proposed 400 kV AC overhead has been considered by both EirGrid and its appointed consultants, and indeed by the Irish government appointed Independent Export Commission. Whilst these estimates are not identical due to assumptions made to form the estimates they are demonstrative of the significant cost difference between the technologies and hence the rating in the multi-criteria assessment in Table 4.6.

47 The cable route for the basis of the costs used in Section 4.7.1 of Chapter 4 of the EIS was assessed by EirGrid and its consultants to find the most direct and hence lowest cost option for the summary comparison. For completeness however Section 4.7.1.1 also discusses the increased cost of the use of offshore cable due to the need for a much more elongated route.

48 In addition to the cost of the main HVDC technology alternatives, the main AC cable alternatives are considered in Section 4.7.2.7 of Volume 3B of the EIS, and 4.7.3.5 in the specific context of partial undergrounding. Section 4.7.2.7 considers both capital and life cycle costs of appropriate capacity rated AC cables and the life cycle cost implications discussed would be applicable for entire route length and/or partial sections.

49 In conclusion both the capital and life cycle costs of the main alternative underground options have been included and assessed in the EIS and the appropriate range of factors have been included. This is further evidenced by the government appointed Independent

Expert Panel conclusion that the methodology (in Appendix 3 of Volume 2A) used for the assessment of the options for the North South Interconnector Project met its terms of reference.

- 50 The Independent Expert Panel opinion on the matter is outlined in section 2.1.3 of volume 2A of the EIS and repeated below:

“Having considered and discussed all of the material, the Panel is unanimously of the opinion that, in all material respects, what has already been done on the N/S project is compatible with the methodologies now being employed on the GW and GL projects. While the Panel acknowledges that no two grid infrastructure projects are identical, and that some noncomparabilities are likely to arise when assessing the potential environmental impacts, technical efficacy and cost factors, the Panel is of the opinion that no material differences in the methodologies arise.”

5.2.5 Building New Generation or Conversion of Existing Generation

- 51 Submissions state that either the building of new generation or conversion of existing generation has not been considered adequately as an alternative to the project. These submissions questioned whether either the main alternatives included new/existing generation use in the EIS and/or whether the conversion of existing units, notably Moneypoint to biomass had been considered.

Applicant's Response

- 52 The consideration of the use of existing or new generation in resolving the shortfall in generation capacity in Northern Ireland is comprehensively discussed as a non-transmission main alternative in Section 4.4.3 of Chapter 4 of Volume 3B of the EIS.

- 53 However as stated in this additional generation or conversion of generation in Northern Ireland:

“would not address either of the other two primary strategic needs, i.e. improving market competition or enabling the increased use of renewable energy.”(paragraph 33 and 36)

- 54 Therefore the use of conversion of existing or new generation in Northern Ireland does not meet the needs and in itself is not a viable alternative to a second high capacity North South Interconnector

- 55 Similarly additional or converted generation in Ireland will not address either of these two primary strategic needs, i.e. improving market competition or enabling the increased use of renewable energy. As generation in Ireland does not increase the available generation capacity in Northern Ireland it is not considered in the EIS as a main alternative.

- 56 Some of the submissions suggested that conversion of existing generation to renewable power sources would reduce the need for the proposed project. Energy policy is a matter for the Government. However regardless of the renewable energy source the new interconnector will facilitate greater renewable integration and a more efficient use of generation resources.

5.2.6 Consideration of Do Nothing Scenario

57 Submissions state that the do-nothing alternative was not considered or adequately considered.

Applicant's Response:

58 The consideration of do-nothing as an alternative is comprehensively discussed in Section 4.2 of Chapter 4 of Volume 3B of the EIS, and EirGrid believes that the concerns raised are all comprehensively covered already in the EIS and its supporting documents.

59 In summary, self-evidently, the do-nothing alternative will not resolve the needs for the North-South Interconnector (as set out in Chapter 2 of Volume 3B of the EIS) and the consequential impact to security of supply, renewables integration, delivery of an efficient and effective Single Electricity Market, and EirGrid's and SONI's statutory, licence and contractual duties in this regard.

60 Separately, but consequently, the attainment of EU and Irish Government policy objectives will be negatively impacted upon by the do nothing scenario.

5.2.7 Tower Design

61 One submission refers to the National Grid UK (NGUK) T-Pylon design currently under development and asks *'have EirGrid considered the UK development of the new aesthetically pleasing pylon style, currently being used in construction of 400 kVA grid lines in UK, which is much more modern in design, simpler in detail, shorter in height and much easier on the eye?'*

62 Volume 3B of the EIS (Chapter 4, Section 4.8.2.1) describes in detail the design process followed by EirGrid in the selection of the towers proposed in this application. EirGrid continually monitors modern developments in technology and material science and actively seek to utilise such developments on the transmission grid against the background of their licenced obligations to provide a safe, secure, reliable, economical and efficient transmission system.

63 As noted in section 4.8.2.1 of Chapter 4, various *'studies evaluated a range of designs that included a number of lattice steel structures, wooden structures and steel monopole structures. A summarisation of these studies can be found in the EirGrid / NIE Meath-Tyrone 400 kV Interconnection Development: Tower Outline Evaluation and Selection Report (October 2009).'* *'The studies found that for a 400 kV OHL, located in a rural setting in Ireland, a lattice steel structure is preferred.'*

64 In section 4.9, it is concluded that *'the preferred support structure for use on the proposed 400 kV single circuit OHL development is the lattice steel structure known as the 'IVI' tower.'*

5.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

5.3.1 Monaghan County Council (SI -2015-0215)

171 Monaghan County Council's submission raises concerns in respect to 60 no. towers namely 107-109, 112, 114, 116-125, 127-131, 133, 134, 137, 139, 141, 144, 146-150, 153-159, 164, 166, 167, 171-176, 179, 182, 183, 186-191, 193, 194, 197-201, 203, 206-208, 210 and 211. The submission sets out *"These towers are either located in elevated or exposed positions or are close to scenic landscapes or landscape features such as lakes and wetlands. The Environmental Impact Statement has failed to justify the positioning of the towers in particular locations in the local landscape that are considered visually obtrusive and has not given due regard to objective LPO1 and policies LPP2 and LPP3 on the Monaghan County development Plan 2013-2019..... greater detail is required to justify the location of each tower on or near the upper reaches of drumlin and elevated ridges and the reason why these towers could not be relocated down slope or rerouted around drumlins or ridges to reduce their prominence in the landscape or upon particular elements of the landscape. The route of the proposed line and siting of the towers should be revised to lessen their visual impact"*.

Applicant's Response:

172 **Section 4.3.3.4** of this report identifies the main routing principles (focusing on technical, environmental and landowner consideration) which guided the line design process for the proposed development.

173 In addition, the Board's attention is drawn to the following issues of relevance in respect of routing across the drumlin landscape namely:

- The design is optimised to reduce the height of the towers on the landscape. Any movement of towers to a lower slope on a drumlin on the current alignment will introduce additional towers that will have to be located at the apex of the contour as certain design parameters have to be adhered to.
- Siting towers on mid contours on either side of the drumlin, if technically feasible, will introduce additional towers elsewhere along the line straight.

174 The concerns identified by Monaghan County Council in respect of 60 no. tower locations are addressed below. In this regard, EirGrid has identified and outlined an evaluation of alternative routes around the contours and the other pinch-points that are listed in the Monaghan and Cavan County Council submission, in order to ascertain the viability of routing around these contours and the knock-on implications for contiguous and subsequent line straights.

175 In this context, a line straight is defined by the distance between two angle towers and the purpose of an angle tower is to facilitate the change in direction of a line route. The evaluation will combine a number of line straights. It should also be noted that a final design to identify individual towers has not been undertaken for the alternative routes and only an assessment of potential line routes has been carried out. Accordingly an estimate of the number of possible intermediate towers located within an alternative line route has been identified. In addition this assessment should be read in conjunction with the landscape and ecological submissions as there is cross over between the disciplines.

5.3.1.1 Line Straight 105-109 (Towers 107 – 109)

176 Monaghan County Council's assessment states "that the visual impact of the towers (107-109) and part of the line upon the Monaghan Way and the landscape would be significantly reduced if relocated to lower ground...".

Applicant's Response

177 The line route is sited in this area to travel along the lower contours in a south-easterly direction in the townland of Lemgare and to minimise the number of line straights within this section. In addition it is also routed to avoid a house in the vicinity of the oversail section between the two jurisdictions and the one off houses at the road crossing in Lisdrumgormly (**Figure 5.1**). The line design has been optimized to ensure that the minimum amount of towers are used within the line straight. The siting of towers on the drumlins of the alignment occurs due to design constraints.

178 Re-siting towers 107 to 109 onto a lower contour would introduce an additional line straight and angle tower in order to avoid the drumlin at Lemgare Rocks. Moreover, an additional intermediate tower may also be merited within this section. The line route would still traverse the Monaghan Way and marginally cross mid contour to the west of Lemgare Rocks. The line route would also be routed in close proximity to large poultry sheds.

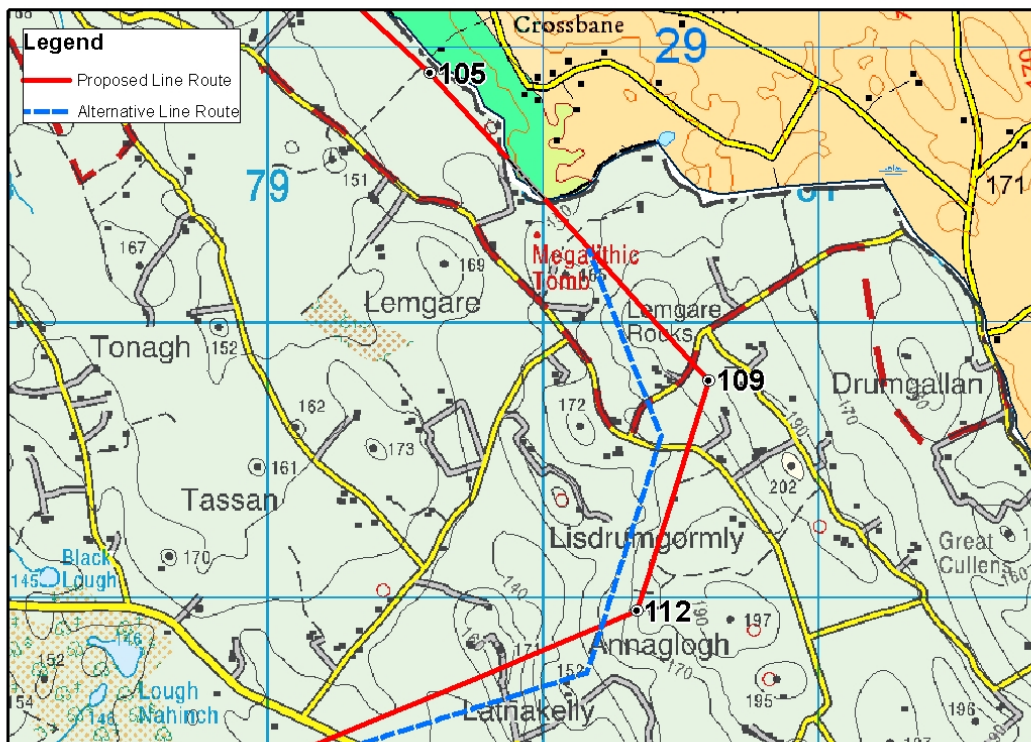


Figure 5.1 Options for Line Straight 105-109 (Towers 107 – 109)

5.3.1.2 Line Straights 112-116,116-118,118-121,121-126 (Towers 112, 114, and 116-125)

179 Monaghan County Council's submission states *"that at tower 112 the visual impact of the tower and part of the line upon the landscape would be significantly reduced and the loss of mature trees would be avoided if tower is relocated to lower ground' in addition the suite of other towers 114, 116-125 states also that they should be relocated to lower ground"*.

Applicant's Response:

180 The current alignment within this section of line routing endeavours to have a sufficient separation distance between constraints including Tassan Lough, Cashel Bog and the geological interest area. One-off housing and outbuildings had to be avoided in the line route selection process. The line design has been optimized to ensure that the minimum amount of towers are used within the line straights. Thus, the siting of towers on the drumlins of the alignments occurs due to design constraints.

181 Re-siting tower 112 and 114 off the contour would bring the line straight closer to Tassan Lough and the geological interest area located to the east of the Lough (**Figure 5.2**). The line route would still be located mid-contour and sited closer to a number of outbuildings. Re-siting Tower 116 to 118 would locate the OHL route closer to the above listed constraints.

182 Re-siting towers 118 to 121 off the contour onto a plateau to the south would cross an additional lane and would site the transposition line straight closer to some outbuildings and housing to the south while at the same time an extra line straight and angle tower would be required to circumvent the contour in the townland of Cashel.

183 Re-siting tower 121 to 125 off the drumlins would introduce an additional line straight and an additional angle tower in the townland of Cornamucklagh North. Moreover, the alignment would be placed closer to additional farm outbuildings.

184 The alternative routing would, therefore increase by two the number of line straights and angle towers and would place OHL marginally closer to the environmental constraints. The number of additional intermediate towers may also increase by one.

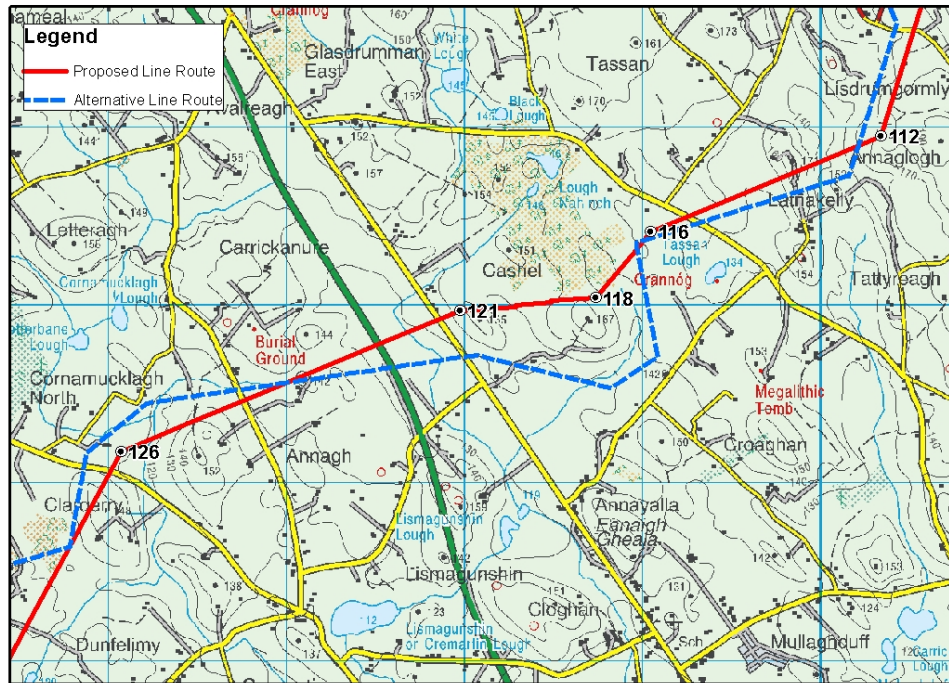


Figure 5.2 Options for Line Straights 112-116,116-118,118-121,121-126 (Towers 112, 114, 116-125)

5.3.1.3 Line Straights 126-130 and 130-132 (Towers 127-131)

185 Monaghan County Council's submission states "that at tower 127 the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated to lower slopes.... 129 to 131 the visual impact of the tower and part of the line upon the setting of the loughs would be significantly reduced if relocated away from Ghost Lough, Drumgristin Lough, and Coogan's Lough."

Applicant's Response:

186 The line route is sited in this area in order to avoid the cutover bog at Clarderry, the drumlin in Derryhallagh and the lakes to the south namely Ghost, Drumgristin and Coogan Loughs. One off housing had to be avoided in the line route selection process. In addition the proposed alignment is routed in order to obtain at an optimum crossing of the existing Lisdrum-Louth 110kV line. The line design has been optimized to ensure that the minimum amount of towers are used within the line straights. The siting of towers on the drumlins of the alignments occurs due to design constraints.

187 An alternative route would place the line route further to the west of the current alignment in the townland of Derryhallagh (Monaghan By) see Figure 3. Re-siting tower 127 of the drumlin would introduce an additional angle tower and line straight. Clarderry bog would have to be traversed if the alternative route to the west was selected. In addition, three additional lane ways would have to be crossed and the line would be placed in closer proximity to a number of houses in the townland of Derryhallagh (Monaghan By) and Lennan. The alternative route would increase the number of line straights and angles by two each. The number of additional intermediate towers may also increase by one.

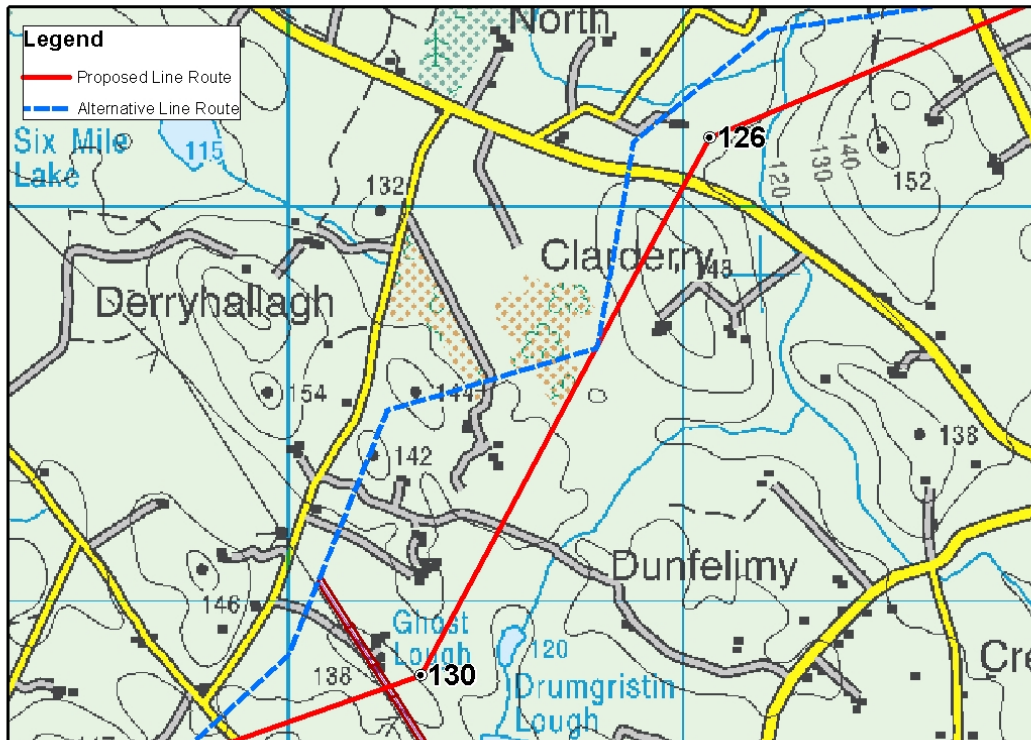


Figure 5.3 Options for Line Straights 3112-116,116-118,118-121,121-126, Towers 112, 114, 116-125

5.3.1.4 Line Straights 132-136,136-140,140-142 and 142-149 (Towers 133,134,137,139,141,144, and 146-150)

188 Monaghan County Council's submission states "that at tower 133,134,137,139,141,144,149 and 150 the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated to lower slopes.... In relation to 146-148 it states that the tower should be directed away from Crinkill or Toome Lough to lessen the visual impact of it and the line upon the setting of the lough".

Applicant's Response:

189 The line route is sited in this area in order to avoid the villages of Doohamlet and Ballybay, and to avoid close proximity to the church in Tullycorbet. The proposed alignment minimise the number of road crossings and is located at what is considered to be an appropriate distance from Lough Major which is located to the east of Ballybay. The dog leg between towers 140 and 142 occurs due to a new house and is routed to avoid one off housing in the area along the road network. The line route within the line straight 142 – 149 traverses a valley and avoids a ridge line which follows the direction of the road to the west of the line. The line route is sited so as to avoid the wetland complex of Crinkill as well as some fragments of mixed woodland either side of the route. One-off housing on minor roads crossings also had to be avoided within this section. The line design has been optimized to ensure that the minimum amount of towers are used within the line straight. The siting of towers on the drumlins of the alignment occurs due to design constraints.

- 190 Siting tower 133, 134 and 137 of the drumlin would require another dogleg in the alignment at tower 132 and require alternative an angle tower in close proximity to the megalithic tomb in the townland of Lennan (see **Figure 5.4**). The alternative line route would run parallel with the Rausker road and then deviate in the townland of Cornanure (Monaghan By) and cross the drumlin in the same townland and skirt along a lower contour in the townland of Terrygreeghan. The alternative alignment would then cross an additional lane and be sited on the lower contour to the south of the R183 Ballybay – Castleblayney regional road also in the townland of Terrygreeghan and travel in close proximity between two large slatted sheds before changing direction in the townland of Tonyglasson (ED Greagh) in very close proximity to the R.C. Church in Tullycorbet.
- 191 In Monaghan County Council's submission the question is raised also whether the line route in the vicinity of Crinkill or Toome Lough could be routed further away. An alternative route would continue from the church and cross two additional lanes within the townland of Clogher. The line route would then be located on the mid contour in the townland of Clogher and Drumguillew Lower.
- 192 In summary the alternative line routing between tower 132 and 149 would increase the number of line straights by one and angle towers by one. It would cross three additional lanes and be sited in very close proximity to the church in Tullycorbet. The number of additional intermediate towers may also increase by one.

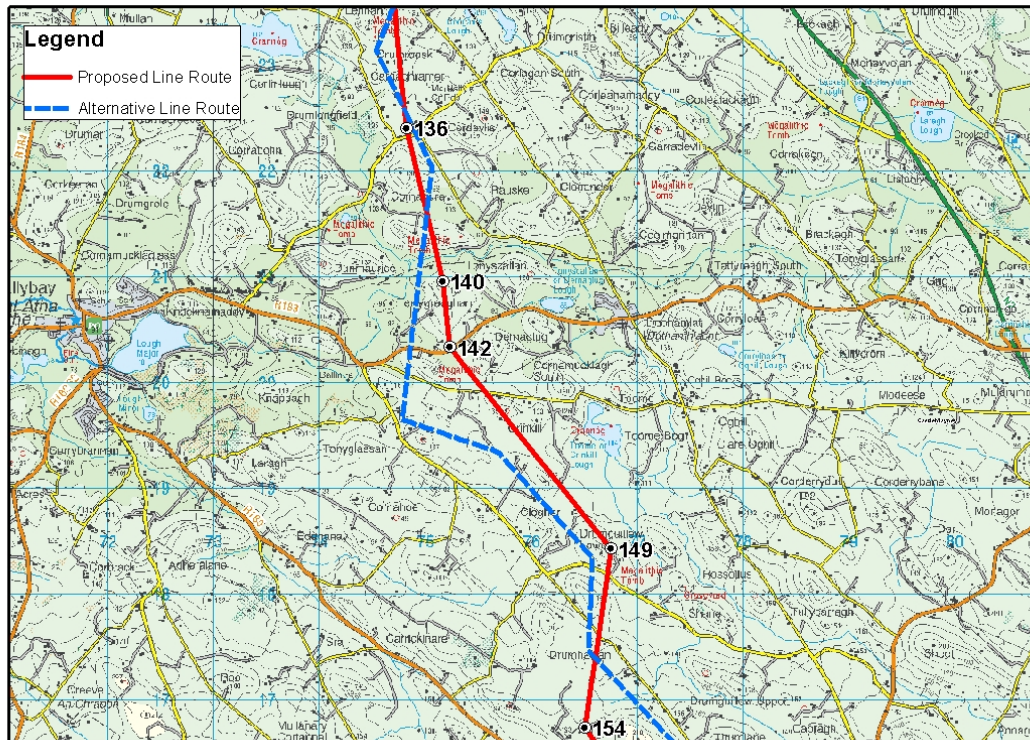


Figure 5.4 Options for Line Straights 132-136,136-140,140-142 and 142-149 (Towers 133,134,137,139,141,144 and 146-150)

5.3.1.5 Line Straights 149-154 (Tower 149-154)

193 Monaghan County Council's submission states "that at tower 149, 150, 153, 154 the visual impact of the tower and part of the line upon the landscape would be significantly reduced if relocated to lower slopes....".

Applicant's Response:

194 The alignment is sited in this area in order to avoid ribbon development and sporadic one off housing that occurs along two minor road crossings and maintains a distance from Drumhowan GAA pitch and a megalithic tomb. The line design has been optimized in this area to ensure that the minimum amount of towers are used within the line straight. The siting of towers on the drumlins of the alignment occurs due to design constraints.

195 The movement of tower 149 and 150 to the west of current location would place the towers on the opposite mid contour in the townland of Drumguillew Lower and then the alternative route would have to cross another drumlin in the townland of Drumhowan to south of road and continue in a southerly direction where tower 153 would be sited marginally to the west of the current location (see **Figure 5.6**) and then run in a south easterly direction running parallel to a minor road where one off houses occur.

196 In summary the alternative line routing between Towers 149 -154 would increase the number of line straights by one and angle towers by one. The number of additional intermediate towers may increase by one.

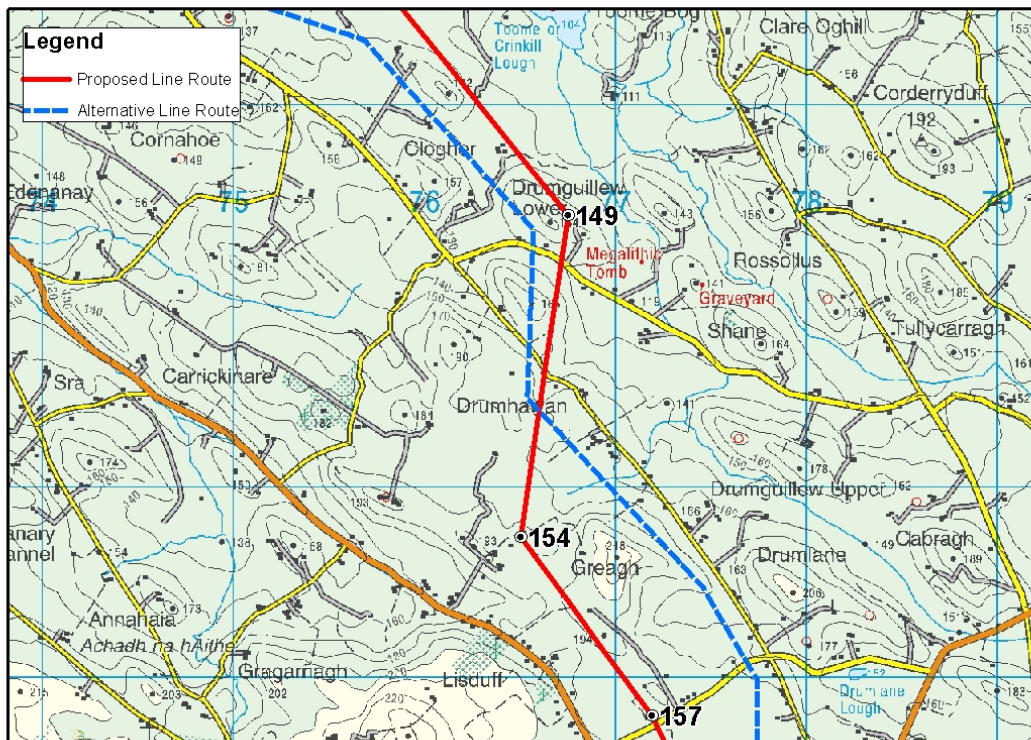


Figure 5.6 Options for Line Straights 1149-154 (Tower 149-154)

5.3.1.6 Tower 154 -159

197 Monaghan County Council's submission states *"that at tower 154,155 the visual impact of the tower and part of the line upon the landscape would be significantly reduced if relocated to lower slopes.... 156 157,158,159 the visual impact of the tower and part of the line upon the landscape would be significantly reduced if relocated away from open and elevated landscape.."*

Applicant's Response:

198 The line route is sited in this area in order to avoid ribbon development along the road network, scenic route north of Lough Egish, the ribbon development which occurs on the main R180 from Lough Egish, and the cutover bog in the townland of Brackly (Cremorne By). The OHL route follows this alignment in order to avoid high ground at Lisduff, Tossy, and Brackly (Cremorne By). The line design has been optimized to ensure that the minimum amount of towers are used within the line straight and, once again, the siting of towers on the drumlins of the alignment occurs due to design constraints.

199 The current alignments between tower 154 and 161 are located within Drumlin and upland farmland of south Monaghan.

200 Moving the alignment to the east in the townland of Greagh (Cremorne By) would place the line on mid contour and also this would be replicated in the townland of Tullynahinnera (see **Figure 5.7**). Moreover, the line route would be placed closer to the scenic route north of Lough Egish with the addition of running the line parallel to the local road in the townland of Drumhawan and Drumlane. Moving the line route to the west of the current alignment between tower 154 and 161 would place the alignment in very close proximity to one off housing and it will also stay within the upland farmland zone.

201 Overall the alternative line considered to the east of the current alignment will bring the line route closer to a lot more housing along the minor roads and closer to the scenic route. The number of additional intermediate towers may increase by one.

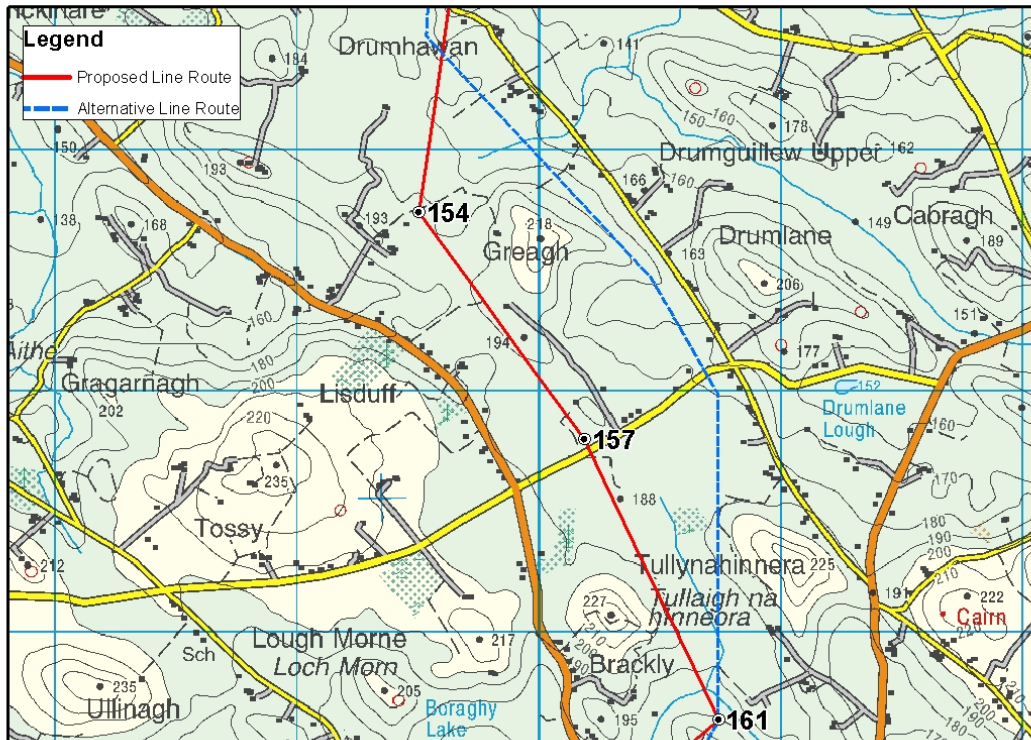


Figure 5.7 Options for Line straights Tower 154 -159

5.3.1.7 Line Straight 161- 166, 166-169 (Tower 164, 166 and 167)

202 Monaghan County Council's submission states "that at tower 164 tower located on mid slope of a drumlin ridge line crossing a regional road... 166,167 the visual impact of the tower and part of the line upon the landscape and Lough Morne would be significantly reduced if directed away from the lough".

Applicant's Response:

203 The line route is sited in this area to avoid the ribbon development which occurs on the main R180 from Lough Egish and the scenic route north of Lough Egish. The line design has been optimized to ensure that the minimum amount of towers are used within the line straight. The siting of towers on the drumlins of the alignment occurs due to design constraints.

204 The line route can be routed to the east (see **Figure 5.8**). In addition the line route would cross mid contour on the drumlin in the townland of Cooltrimegish and Aghmakerr. The alternative line route to the east would increase the number of line straights by one and angle towers by one. It is anticipated that no new intermediate towers would be required for the alternative line route section.

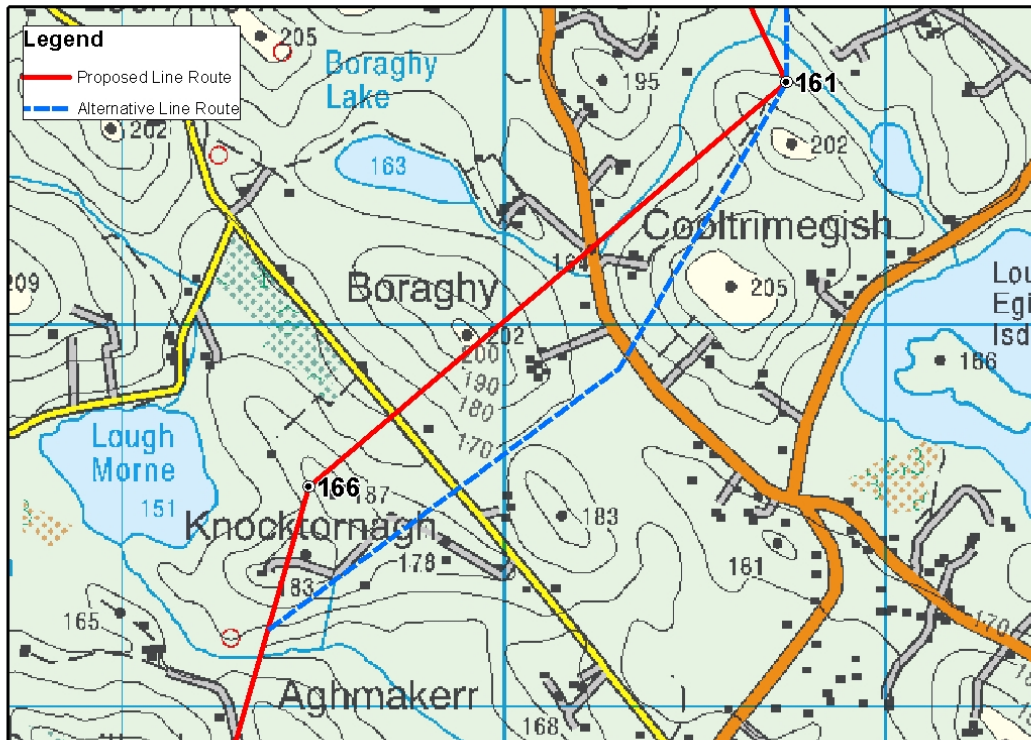


Figure 5.8 Options for Line straights 161- 166, 166-169 Tower 164, 166, 167

5.3.1.8 Line Straight 169-176, 176-181 (Tower 171-176 and 179)

205 Monaghan's County Council's submission states "that at tower 171, 172, 173, 174 the visual impact of this tower and part of the line upon the landscape and scenic route would be significantly reduced if directed away from the scenic route and Historic Designed Garden and relocated to the lower slopes... 175 the visual impact of the tower and part of the line route upon the landscape would be significantly reduced if relocated to the lower slopes... 176 the visual impact of this tower and part of the line upon the landscape and Bocks Lough would be significantly reduced if directed away from the Lough to the lower slopes... 179' the visual impact of the tower and part of the line upon the landscape would be significantly reduced if relocated to the lower slopes"

Applicant's Response:

206 The line route is sited in this area to avoid the scenic route, Shantonagh Lough and Bock's Lough and one off housing located on the R181. It crosses the existing Louth-Rathrussan 110kV line at an optimum crossing as well as avoiding one off housing along the minor roads and the church at Lough-Egish.

207 An alternative route would commence from Tower 169 and travel to the southeast through the townlands of Tooa, Tullyglass and Beagh (Cremorne By) and run in close proximity to the road in Beagh and the mill which is located adjacent to the road (see Figure 5.9). It would then deviate at close to 90 degrees to avoid the ringfort in the townland of Beagh (Cremorne By) and cross to the north of Bock's Lough and cross on the mid contour. The alternative line routing between Towers 169 -181 would increase the number of line straights by three and angle towers by three.

- 208 An alternative route to the west of Bocks Lough to circumvent Bock's Lough would exist which would cross two roads where one-off housing is prevalent. The line route in this section would continue on to Tower 181 and would still cross mid contour on the drumlin in the townland of Cornasassonagh. It is anticipated that no new intermediate towers would be required.

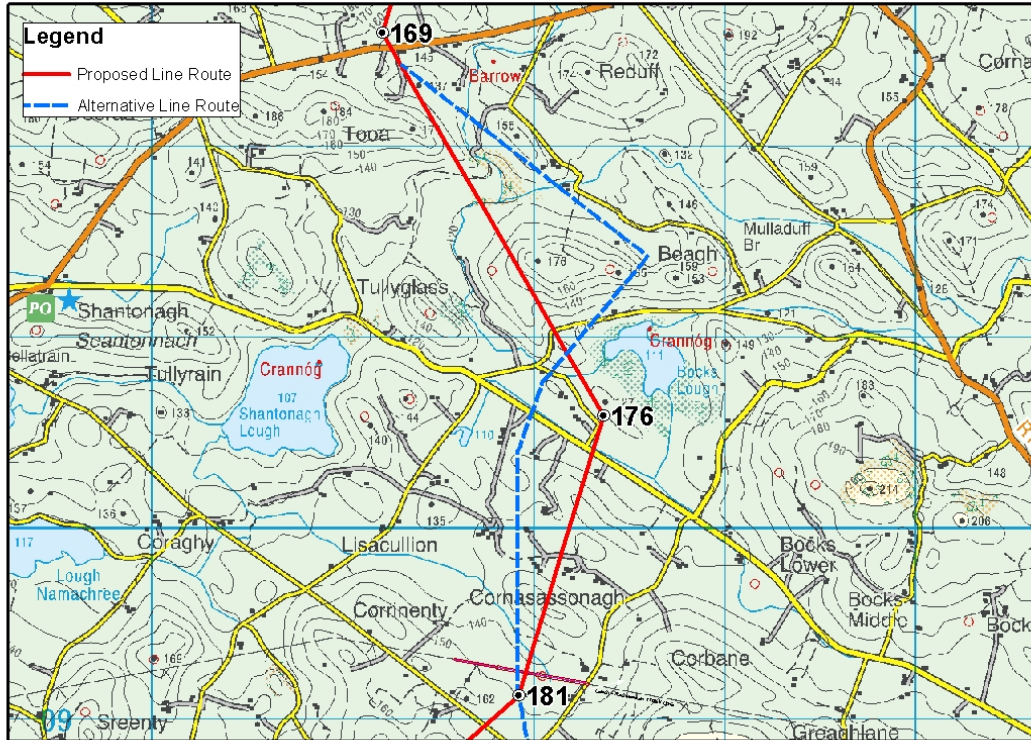


Figure 5.9 Options for Line straights 169-176, 176-181, Tower 171-176, 179

5.3.1.9 Line Straight 181-184 (Tower 182 and 183)

- 209 Monaghan's County Council's submission states "that at tower 182, the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated to the lower slopes... 183 the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated away from the plateau"

Applicant's Response:

- 210 The line route is routed in this area to avoid one-off housing.
- 211 An alternative line route to the east of the current alignment is viable which crosses three minor roads and would be located on the ridge and plateau in the townland of Ummerafree (see Figure 5.10). The route would traverse due south from Tower 181 crossing two minor roads and turn 90 degrees to the west to avoid housing and extend through Tower 184 for a distance of 400m. Moreover, if the alternative route was adopted the number of line straights would increase by two and the number of angle tower would also increase by the same number. It is anticipated that two additional intermediate towers may be required.

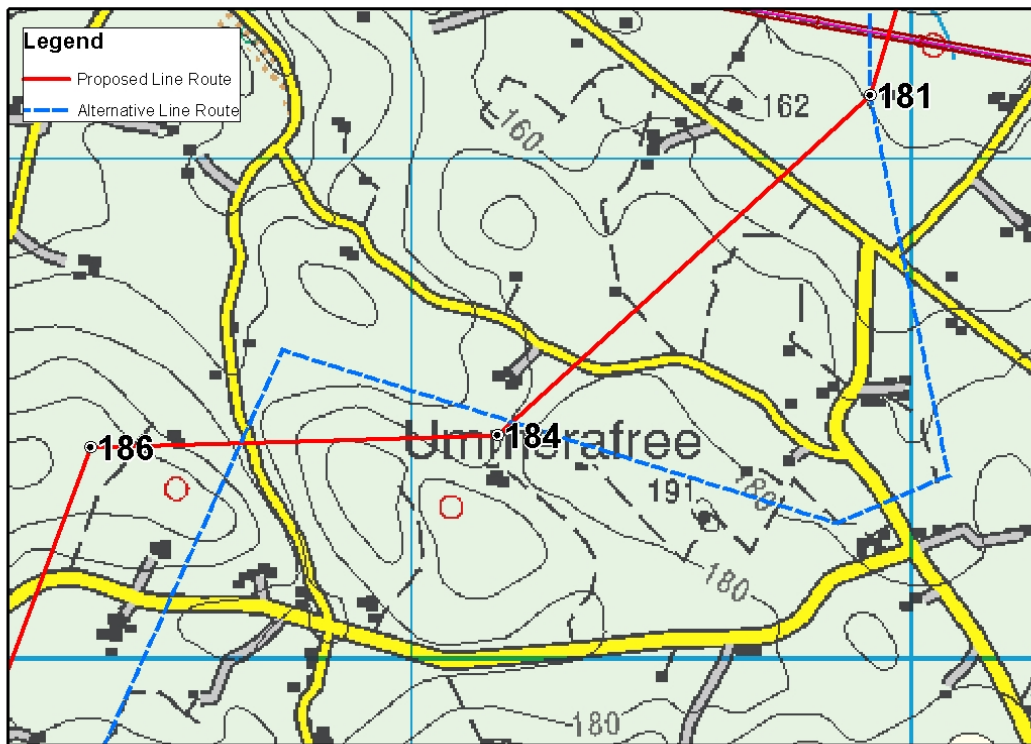


Figure 5.10 Options for Line Straights 181-184 Tower 182,183

5.3.1.10 Line Straight 186-188 and 188-197 (Tower 186-191, 193 and 194)

212 Monaghan County Council's submission states "that at tower 186,187,188,189,190,191,193 the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated to the lower slopes... 194 the visual impact of this tower and part of the line upon the landscape and Corvally Lough would be significantly reduced if directed away from the lough and relocated to the lower slopes"

Applicant's Response:

213 The line route is routed in this area to avoid the ribbon development located to the south. The route is aligned in this direction in order to avoid Corduff and the high contours at Shanco (Farney By) and Greaghlatacapple and Corduff (Farney By) and to avoid one off housing at road crossings.

214 A viable alternative route within this section of line route exists (see **Figure 5.11**) and would deviate from Tower 184 and travel in a north-westerly direction meandering between the drumlins in the townland of Ummerafree, where an angle tower would be sited, and then head in the south-westerly direction crossing on a lower contour between the townland of Ummerfree and Sreenty before deviating south of Tower 188 and proceed in a south-westerly direction crossing two minor roads and deviating slightly once again to avoid the drumlin in the townland of Coevally (Farney By). The alternative line route would then run in a south-easterly direction, crossing the regional road R178 and a minor road and then meet up in proximity to Tower 195, located approximately 500m south of

Corvally Lough and would be located marginally closer to the school in the townland of Corcreaghagh.

- 215 If the aforementioned alternative route was selected, it would introduce three additional line straights and three angle towers. The alternative alignment would also be located closer to the school in the townland of Corcreaghagh. Thus, as can be appreciated, the current alignment significantly reduces the number of line straights within the receiving environment. The current alignment is routed insofar as possible off the main contours within this section. It is anticipated that one new additional intermediate tower may be required.
- 216 If the aforementioned alternative route was selected it would introduce three additional line straights and the same number of angle towers. The alignment would also be located closer to the school in the townland of Corcreaghagh. The current alignment significantly reduces the number of line straights within the receiving environment. The current alignment is routed insofar as possible off the main contours within this section. It is anticipated that one new additional intermediate tower may be required.

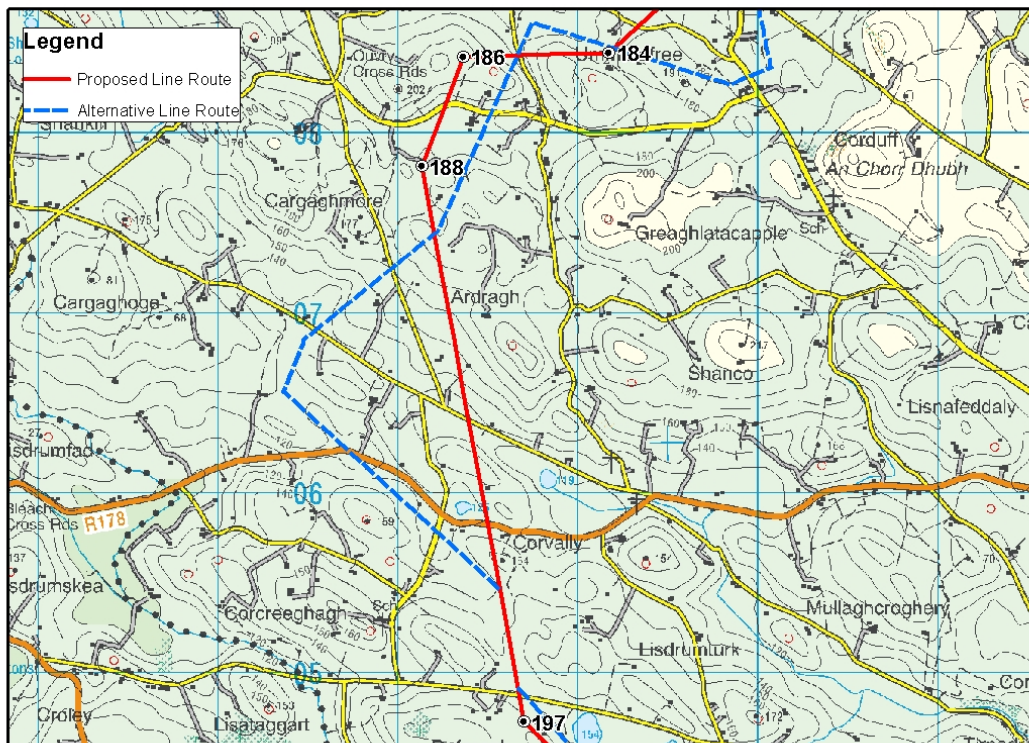


Figure 5.11 Options for Line Straights 186-188, 188-197 Tower 186-191, 193, 194

5.3.1.11 Line Straight 197,203, 203-207 and 207-212 (Tower 197-201, 203,206-208,210 and 211)

- 217 Monaghan County Council's submission states "that between 197- 201, 203, 208, 210, and 2011 the visual impact of this tower and part of the line upon the landscape would be significantly reduced if relocated to the lower slopes.... 206,207 the visual impact of this tower and part of the line upon the landscape and Corlea Bog would be significantly reduced if directed away from the bog".

Applicant's Response:

- 218 The line route is routed in this area to avoid the cluster of one-off housing in the area and to avoid the lakes to the east and west of the alignment. The line route crosses the main R162 (Kingscourt- Shercock) road in order to circumvent the lakes west of the line route at Northlands. The route is also a sufficient distance removed from the wetland complex of Greghlone Lough.
- 219 An alternative route does exist within the above section (see **Figure 5.12**). Tower 197 could be sited to the north of its current location and a new angle tower would be sited in the south east corner of the townland of Raferagh. The alternative line route would then be located in very close proximity to the lake in the townland of Raferagh and would then proceed in a south-easterly direction on the lower contour of the drumlin in the townland of Cornalaragh and cross an additional lane within this area. In order to avoid the Corlea bog, the line route would have to be located to the west of the current alignment (approximately 150m to west of Corlea bog) and would cross more or less on the same contour in the townland of Corlea (ED Drumcarrow) and the townland of Scalkill.
- 220 If the alternative route was chosen the number of line straights and angle towers would increase by one. In a number of instances the line route will also cross on the same contours. It is anticipated that no new intermediate towers would be required for the alternative line route.



Figure 5.12 Options for Line Straights 197,203, 203-207, 207-212 Tower 197-201, 203,206-208,210, and 211

5.3.1.12 Summary of Alternative Routes Proposed

221 In summary if the alternative line routes were adopted, the number of line straights and angle towers would significantly increase. In the current CMSA alignment proposed for approval by the Board, 30 no. angle towers are proposed whereas if all the alternative routes were adopted then 48 no. angle towers would be required. In a number of cases, the line route would still have to cross on the same contours and the line route would be sited closer to other environmental, physical and social constraints. The length of approximate alternative line route would increase by 3.5km which would equate to an increase of 10 additional intermediate towers along the CMSA line route. Accordingly, it is EirGrid's considered position that the current alignment in County Monaghan is the most optimum solution which balances all the competing issues within the receiving environment.

5.3.2 SI (2015) 214 – Cavan County Council

5.3.2.1 Council Submission in relation to Line Routing

222 Cavan County Council's submission states *'that proposed Angle tower T 212 as viewed from the regional road R162, is located on elevated lands close to residential dwelling CMSA R_187 and should be considered for re-siting in order to reduce any potential impact on the visual amenity of the existing dwelling house...'* *Proposed Angle tower T 217 – position is too close to the existing residential dwelling and farm buildings CMSA_142, CMSA R 201 & R199'.*

Applicant's Response:

223 Re-siting Tower 212 to the south-west, approximately 200m to the south of the existing outbuildings, could be achieved. However, an additional angle tower to the south of the next road crossing to the south would be required in the townland of Lisagoan. The potential relocation of Tower 217 away from the residential houses in Drumiller would involve a re-siting of the angle tower to the south and an additional tower would be required to be sited to the north-west approximately 400m from the existing Tower 217 (see **Figure 5.13**).

224 In summary, if the alternative route was to be adopted, it would introduce an additional two straights and two subsequent angle towers to move the line route further way from the residences in Lisagoan and Drumiller. Although the separation distances between the alternative line route and the residences would be approximately increased to 120m and 100m from 74.8m and 62.2m respectively, it is anticipated that one new intermediate tower may be required.



Figure 5.13 Tower 217

5.3.2.2 SI (2015) 2014 Cavan County Council submission in relation to line routing

225 Cavan submission states “It is unclear from the dwellings submitted where the 400 kV is in proximity to occupied dwellings in Co. Cavan”.

Applicant's Response

226 The suite of 1:2,500 drawings submitted to the Board list, insofar as possible, all the occupied dwellings within 200m of the overhead line (which are delineated on the maps with the distances measured to the occupied dwellings). Geo directory data was sourced from An Post to identify all dwellings within the study area. The geo directory data may not be correct for all locations, depending on where the registered point of house is taken by An Post. New dwellings may also not always be captured. However, EirGrid and its consultants have endeavoured to cross-check by site verification whether any occupied dwellings were omitted from the application drawings and these locations were also registered on the maps with distances to the overhead line

6 CONSTRUCTION

6.1 OVERVIEW

- 1 The topic of construction considers the overall construction of the proposed development. It outlines the associated construction methodology and activities along the route alignment.
- 2 Construction was raised as an issue in approximately 361 no. of submissions/observations. These submissions are listed in Table 15 of **Appendix 1.2** of this report. There are a number of recurring issues raised in the submissions in relation to construction. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is Table 16 of **Appendix 1.2** of this report.
- 3 The construction of the overhead line can be divided into five general stages, according to the following sequence:
 - Stage 1 – Preparatory Site Work;
 - Stage 2 – Tower Foundations;
 - Stage 3 – Tower Assembly and Erection and Preliminary Reinstatement;
 - Stage 4 – Conductor / Insulator Installation; and
 - Stage 5 – Final reinstatement of Land.
- 4 These five stages are detailed in the construction chapter, Chapter 7, Volume 3B of the EIS. The construction chapter also details proposed:
 - Modifications to three existing 110 kV overhead lines;
 - Extension to the existing Woodland 400 kV substation;
 - Construction material storage yard; and
 - Maintenance of the proposed development.

6.2 RESPONSE TO GENERAL ISSUES RAISED

- 5 The Construction of the proposed development is considered in Chapter 7, Volume 3B of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by observers.

6.2.1 Potential Impact from Access Routes

- 6 A large number of submissions provided comments regarding the access routes proposed by EirGrid. The feedback can be broadly categorised as relating to the suitability of the routes and potential to impact field drains, hedgerows and the operation of the farm. Several submissions also request that alternative access routes be considered.

7 For a detailed response on the potential for proposed access routes to impact land use, and in particular farming activities, see **Section 10.2.2.1**; and for a detailed response on the potential impacts to hedgerows of facilitating access routes, see **Section 12.2.8**.

8 The responses below are focused on construction issues of relevance raised in the submissions.

6.2.1.1 Suitability of Routes

9 Several submissions note the access routes proposed are inadequate and unsuitable to be used by the heavy machinery required to construct the proposed development.

Applicant's Response:

10 As noted in Section 7.3.4.1.2 of Volume 3B *“temporary access routes capable of accommodating construction plant, construction materials and personnel are required for the construction of each tower, installation of the conductor and the setting up of guarding locations”*. Chapter 7 of Volume 3B also outlines a suite of different construction methods that are available to use depending upon the ground conditions and / or site constraints encountered.

11 As noted in Section 7.3.4.2.2 of Volume 3B, where a concrete truck cannot access a tower foundation site, *“a wheeled or tracked dumper may deliver the ready-mix concrete to the excavation site”*.

12 Also in Section 7.3.4.3.2 of Volume 3B, it is noted that a *“tower can be erected using a derrick / gin pole and tractor.”* This avoids the need for a mobile tower crane which would only be proposed as a tower erection method at sites with *“optimal ground conditions”*.

13 In situations where access routes may be too narrow for heavy machinery, the above mentioned construction options are available to ensure that the line can be constructed in a safe and secure method while still minimising the impact upon existing access routes.

6.2.1.2 Potential Impact upon Field Drains

14 Several submissions also note that proposed access routes that cross fields have the potential to impact upon existing field drains.

Applicant's Response:

15 As noted above, construction methods are outlined in Chapter 7 of Volume 3B, which allow for works to be completed where the largest vehicle involved is a tractor. As a result, larger machinery such as 32 tonne concrete trucks do not have to travel over fields and potential land damage can be avoided.

16 For access routes over fields where there are poor ground conditions, a sensitive receptor or sensitive land use, it is noted in Section 7.3.4.1.3, of Volume 3B, that the laying of access tracks, i.e. *“temporary rubber matting or aluminium track panels”*, may be required for 24 no. different access routes.

6.2.1.3 Potential Access Route Changes

17 Some landowner submissions raise issues in respect of the access route proposed over their lands and in one case suggested an alternative route.

Applicant's Response:

18 It is always EirGrid's objective to facilitate landowner requests where practicable and where it does not create additional impact. However, it was not feasible, within the timeframe available to complete this response report, to carry out a full evaluation of potential changes to approximately 11 no. access routes requested either by a landowner or under consideration due to issues landowners have raised.

19 EirGrid will continue to seek to engage with these landowners with the intention of confirming whether or not the access routes involved will be changed.

6.2.2 Potential Health and Safety Impact

20 A number of submissions raised concerns regarding potential health and safety risks associated with the construction of the proposed development. These primarily relate to farming practices. For detailed response on the potential for health and safety impacts of operating farm machinery under high voltage electricity lines, see **Section 10.2.3.4**.

6.2.3 Construction Environmental Management Plan (CEMP)

21 A number of observers, in particular several prescribed bodies, have made submissions regarding the Construction Environmental Management Plan (CEMP). Some of the issues raised are discussed in **Section 6.3**. The remaining CEMP queries are dealt with in other relevant sections of the report.

6.2.4 Potential Impact from Construction Details (Footprint / Specifications)

22 A number of observers, including prescribed bodies, have sought clarification or details relating to particular construction works, including working areas, foundation depths etc. The main issues raised are considered in **Section 6.3** and **Section 6.4**.

6.3 SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

6.3.1 SI (2015) 207 – Department of Arts, Heritage and the Gaeltacht

23 The Department of Arts, Heritage and the Gaeltacht note that '*An Bord Pleanála should ensure that the outline Construction and Environmental Plan (CEMP)... contains enough detail of the proposed measures to complete, precise and definitive appropriate assessment and ensure protection of water quality*' (SI(2015)-0207 Page 8 final paragraph).

Applicant's Response:

- 24 Section 6.1.2 (pages 23-26), of the Outline CEMP, Volume 3B Appendices (Appendix 7.1) outlines a full suite of mitigation measures proposed to ensure protection of water quality. The topic of water is also dealt with comprehensively in **Section 14** of this report.

6.3.2 Monaghan County Council (SI -2015-0215)**6.3.2.1 Suitability of Access Routes**

- 25 In Section 2.7.2 of its submission, Monaghan County Council notes that it is proposed to create "new 4 metre wide access tracks to towers and stringing locations." They then list thirty six tower locations where "access will necessitate hedgerow removal".

Applicant's Response:

- 26 As noted in Section 7.3.4.1.3 of Volume 3B "access routes could be up to 4m in width" however, the majority of access routes will be less than 4m wide. As noted in Section 7.3.4.2.2 of Volume 3B "a wheeled or tracked dumper may deliver the ready-mix concrete to the excavation site". As such, it will not be necessary to widen any existing tracks, some trimming of hedgerow may however be required to facilitate the passage of vehicles.

6.3.2.2 Temporary Construction Material Storage Yard**6.3.2.2.1 Potential Impacts from Construction Details (Footprint/Specifications)**

- 27 In section 2.19.3 of its submission, Monaghan County Council concludes that "subject to retention of the vegetation on the boundaries of this site and additional landscaping where necessary, the temporary storage compound will be sufficiently integrated into the landscape."

Applicant's Response:

- 28 As detailed in the temporary yard site layout drawing (MT-009-002), the new palisade fencing and noise barrier will be erected within the existing site boundary post and rail fence and will not impact upon the existing boundary vegetation.
- 29 Volume 3C, Chapter 6 (Section 6.5.2.1.5) confirms that "some minor hedgerow removal will also occur along the southern boundary of the site to provide adequate vehicular access." In this regard, the overall impact of the construction yard upon flora and fauna is considered to be a "temporary imperceptible negative impact".

6.3.2.2.2 Potential Impacts from Construction Details (Footprint/Specifications)

- 30 Monaghan County Council also notes in Section 2.19.3 of its submission, that there are "no plans in relation to the structures on site".

Applicant's Response:

- 31 The temporary yard site layout drawing (MT-009-002) provides indicative locations for prefab staff offices, portaloos and staff car parking. Further details on the temporary yard are provided in Section 7.3.1 Volume 3B of the EIS. As noted, the structures are temporary in nature and as such detailed floor plans in relation to these temporary structures are not required at this stage of the proposed development.

6.3.2.2.3 Reinstatement of Land

- 32 Monaghan County Council also refers to the need for a planning condition *"for the restoration of the site to its original state following completion of the development"*.

Applicant's Response

- 33 The commitment to restore the site to its former condition is expressly provided by EirGrid within the EIS in Section 7.3.1, Volume 3B of the EIS.

6.3.2.3 Potential Impacts from Construction Details (Footprint/Specifications)

- 34 Monaghan County Council comments in section 2.20.2 that *"there will be larger working areas for towers 166 and 168. However no specific details have been provided within the environmental statement for each separate tower site including actual area on the ground and depth of excavation works."*

Applicant's Response:

- 35 The larger working areas for Towers 166 and 168 are illustrated in Figure 7, Volume 3B Figures (1:5,000). As noted in section 7.3.4.1.2 in Volume 3B, the larger working area takes account of additional excavations required *"to ensure the ground at a higher level above the foundation remains stable for the duration of the foundation works."* As such, the foundation depth has not changed but there is a wider area of excavation works being accounted for to ensure stability of the foundation excavation.

6.3.2.4 Access Routes

- 36 Monaghan County Council also comments in section 2.20.2 of its submission that *"the precise locations of any access tracks that require extensive works has not been detailed either"*.

Applicant's Response:

- 37 Volume 3B, Chapter 7 (Section 7.3.4.1.3) provides details of access routes that potentially require temporary rubber matting or aluminium tracks. In Section 7.3.4.1.4, the typical duration for the laying of these temporary matting/tracks is provided, i.e. 0.5 km of track in one day.

6.3.3 Transport Infrastructure Ireland (TII) (SI-2015-230)

6.3.3.1 Potential Impacts from Construction Details (Footprint/Specifications)

38 TII comment that the project EIS *“does not appear to identify in detail the methods/techniques employed in traversing the existing national road network, the Authority requests that the required safety and standards of the national road network is maintained through appropriate best practice construction and approval methods.”*

Applicant's Response:

39 Volume 3B of the EIS, Sections 7.3.2 and 7.4.4.1 outline guard pole and catenary support system protection measures respectively that will be implemented to ensure road crossings are protected for the full duration of the stringing stage. ESB adopts utility industry best practice construction methods and have successfully strung overhead transmission line conductors safely and securely over numerous major and national roadways following detailed consultation with the relevant authority.

40 Sections 7.3.2 and 7.4.4.1 of Volume 3B, detail guard pole and catenary support system protection measures respectively that will be implemented to ensure road crossings are protected for the full duration of the stringing stage. ESB, the Transmission System Owner, adopts utility industry best practice construction methods and has successfully strung overhead transmission line conductors safely and securely over numerous major and national roadways.

41 As detailed in the outline Traffic Management Plan (section 4.14, Appendix 7.3, Volume 3B Appendices) EirGrid will ensure that consultation occurs between the ESB and the TII, the M3 Concession Company and the relevant planning authorities for the purposes of confirming the implementation of the detailed construction methodology outlined in the application documentation.

6.3.4 Health Service Executive (HSE) (SI -2015-0 210)

6.3.4.1 Construction Environmental Management Plan (CEMP)

42 The HSE comment that they *“could not locate within the EIS an assessment of potential pest control issues arising from construction of the development.”* The HSE also recommends that a *“rodent control programme be included in the Construction Environmental Management Plan to address and alleviate any potential issues arising from construction works”*.

Applicant's Response:

43 Appendix 7.1, Volume 3B Appendices comprises an outline Construction Environmental Management Plan (CEMP). Section 5.8 of the outline CEMP notes that a site waste management plan will be developed which will address the requirements set out in *“The ESB Networks Environmental Policy Statement on Waste Management”* and all current waste management legislative obligations.

- 44 While specific procedures are not detailed within an outline CEMP, there are two sample CEMP contents lists from previous ESB project CEMPs. A procedure for *“litter control & site clearing”* is listed within the CEMP contents list for the Salthill – Screebe 110 kV Transmission Line project provided in Annex 1 of Appendix 7.1. A similar procedure will be put in place for this proposed development and will be contained within the final project CEMP.
- 45 The HSE also commented that they could not locate *“any procedure to deal with complaints from members of the public”* within the EIS.

Applicant's Response:

- 46 While specific procedures are not detailed within the outline CEMP, there are two sample contents lists from previous ESB project CEMPs. A procedure for registering and investigating public complaints is listed within the CEMP contents list for the Salthill – Screebe 110 kV Transmission Line project provided in Annex 1 of Appendix 7.1. A similar procedure will be in place for the proposed development and contained within the project CEMP.

6.3.5 Northern & Western Regional Assembly (SI -2015-0026)

6.3.5.1 Potential Impacts from Construction Details (Footprint/Specifications)

- 47 The observer notes that *“The developer is not seeking any facility for micrositing; in order to ensure this certainty in location, specific on site investigation for all transmission towers may need to be completed as part of the application.”*

Applicant's Response:

- 48 It is confirmed that permission for micro-siting is not being sought so landowners and other interested parties have clarity on the precise location of the OHL and associated infrastructure relative to particular landholdings. Volume 3 provides a robust appraisal of the likely significant environmental impacts associated with the all aspects of the proposed development including tower locations and proposes precautionary mitigation measures.
- 49 Refer to **Section 2.1.4.2** for a response in relation to pre-construction surveys / studies.

6.3.6 Irish Water (SI -2015-0016)

6.3.6.1 Health & Safety

- 50 Irish Water requests that EirGrid *“engage with Irish Water at the design stage, in order to determine both, the potential impacts of proposed works on Irish Water assets and to agree appropriate mitigation measures where necessary.”* Irish Water also requests that EirGrid provides a method statement and communication strategy for *“notifying and engaging with Irish Water regarding works programme.”*

Applicant's Response:

- 51 Volume 3B, Chapter 7 (Section 7.4), notes that all health and safety legislation will be complied with. One element of complying with this legislation is the identification of underground services in the design stage of the project. One of the utility services that would be identified will be Irish Water assets. In Section 7.3.4.1.2 of Volume 3B, it is noted that any underground water pipe which may be affected by proposed excavations will be diverted before commencement of construction of the overhead line.
- 52 Method statements, which will incorporate all relevant measures identified in the outline CEMP and other relevant application documentation will be finalised in advance of the construction stage commencing. Irish Water will be provided with a copy of the relevant method statement for dealing with existing underground services.

6.4 SPECIFIC ISSUES RAISED BY OBSERVERS**6.4.1 Co. Monaghan Anti-Pylon Committee (SI 2015-278)****6.4.1.1 Potential Impacts from Construction Details (Footprint/Specifications)**

- 53 At page 7 of its submission, CMAPC compares the tower height ranges between the SONI and EirGrid sections of the proposed development. The observer comments that the differences in values "*show the value in direct access to lands*".

Applicant's Response:

- 54 The tower type with a height of approximately 51m is a transposition intermediate tower. This type of tower is a higher structure than standard intermediate towers as it must change the position of the three phases over three spans of the circuit. This is explained in Section 5.4.2.2. of Volume 3B of the EIS. As the transposition section of the proposed development is located within the Cavan Monaghan Study Area (CMSA), which the middle section of the alignment between Turleenan and Woodland, the maximum tower height for EirGrid's section is significantly more than the maximum tower height in SONI's section of the proposed development (which does not contain any transposition intermediate tower). This does not relate in any way to access to lands, but is simply due to the required location of the transposition of the proposed 400 kV circuit.

6.4.1.2 Suitability of Access Routes

- 55 The observer comments on page 5 of their submission (Material Assets) that "*there is no specific information on the treatment of new or widened entrances or the widening of access tracks*".

Applicant's Response:

- 56 As noted in Section 7.3.4.1.3 of Volume 3B, "*access routes could be up to 4m in width*". This notes the maximum possible width but does not represent the majority of access routes. Existing access tracks are not proposed to be widened. As noted further on in the Construction chapter of the EIS (Section 7.3.4.2.2), "*a wheeled or tracked dumper may deliver the ready-mix concrete to the excavation site*". As such, where necessary smaller

machinery can be used where existing access routes are too narrow to accommodate concrete trucks.

6.4.1.3 Use of Stone Roads

57 The observer notes in page 7 of the submission that SONI proposes the use of stone roads. The observer concludes that the access to lands *"influenced the decision by NIE to put down proper stone roads."*

Applicant's Response:

58 As noted in Section 7.3.4.1.3 of Volume 3B *"Type 3 roads constructed with stone or wooden sleepers will not be required at any of the proposed tower locations, stringing areas or guarding locations."* After completing a detailed assessment of all proposed access routes, type 2 *"temporary rubber matting or aluminium road panels"* are required at twenty four of the tower access routes within the proposed development. These twenty four access routes have been evaluated and described in the EIS.

6.4.1.4 Access Tracks – Aluminium Road Panels

59 The observer also notes in page 7 of the submission that the *'Consolidated ES states that temporary metal panels are not suitable for use on steep inclines or in wet weather'*. The observer goes on to state that *'EirGrid propose only to use temporary rubber mats or metal panels as access tracks'*.

Applicant's Response:

60 The Consolidated ES states that *"Trackway is not suitable for use on steep inclines or in prolonged wet weather"*. This statement relates to a specific *'Trackway'* type of aluminium road panel design. In Section 7.3.4.1.3 of Volume 3B for this proposed development the use of *"temporary rubber matting or aluminium road panels"* are proposed at 24 no. access routes. The terrain along these 24 no. access routes has been evaluated and will not preclude the use of a *'Trackway'* type aluminium road panel.

6.4.2 North East Pylon Pressure (NEPP) (SI 2015-332)

61 It should be noted that this Response Report addresses only those construction issues arising from the NEPP submission on the current, as opposed to the previous, application for planning approval.

6.4.2.1 Potential Impacts from Construction Details (Footprint/Specifications)

62 In page 69 of the submission, NEPP state that a potential impact of the proposed development is *"risk of accidental death" "owing to structural failure of power lines"* and *"owing to structural failure of pylons"*. The observer goes on to note that another potential impact of the proposed development is the probability of structure failure is increased *"during weather events – wind, frost snow, lightning"*.

Applicant's Response:

- 63 As noted in Section 7.4, Volume 3B of the EIS *"during the design and throughout the construction of the proposed development the client, designers, project supervisors, contractors, and workers will be required to comply with all applicable Health and Safety legislation and practice."*
- 64 The line has been designed to comply with relevant international design standards and specific national standards. These standards require that the line be designed to withstand significant weather events. Since the energisation of two 400 kV overhead line routes on the existing transmission system in the 1980's, no structural failures have occurred on over 400 km of 400 kV OHL network.
- 65 Please refer to the Land Use section of this report (**Section 10**) for a full response to all of the land use impacts listed by the observer in page 69 of their submission.

6.4.3 Councillor Seamus Coyle (SI 2015-0118)**6.4.3.1 Potential Impacts from Construction Details (Footprint/Specifications)**

- 66 The observer comments in page 7 of their submission that at each tower foundation the *"achievement of a level platform for the proposed new ground levels will also involve excavation works. This will inevitably scar the landscape."*

Applicant's Response:

- 67 In Section 7.3.4.1.2, Volume 3B it is noted that *"the towers are designed such that a difference in ground level can be accommodated from one side of the tower to the other, hence minimising the quantity of local disturbance."* However, it is acknowledged that *"where the gradient is less than 1m, and the impact is moderate, consideration will be given to levelling the site foundation area."*
- 68 Further on within Section 7.3.4.1.2 it is noted that *"once the foundations are constructed the ground level around the excavated area will be assimilated into existing landscape contours as much as is feasible, avoiding sharp changes of angle within the constraints of the working area and achieving the objective of minimising land use impacts."*

6.4.4 Maria & Philip Fitzpatrick (SI 2015-0147)**6.4.4.1 Potential Impacts from Construction Details (Footprint/Specifications)**

- 69 The observer notes in page 6 of their submission that *"the pylons require 3.6 m foundations for the smaller pylons, as 104 is over 42 m high the foundations will be deeper again"*.

Applicant's Response:

- 70 As noted in Section 7.3.4.2.3, Volume 3B, the maximum foundation depth for an angle tower will be 3.5m. Tower 104 is an intermediate tower and the maximum foundation depth for this particular type of tower will be 2.5m, which is significantly less than that for

an angle tower. In any event, a higher tower will not necessarily result in a deeper foundation.

6.4.5 Maurice & Joanne McAdam (SI 2015-0171)

6.4.5.1 Potential Impacts from Construction Details (Footprint/Specifications)

71 In Page 11 of their submission, the observer comments upon the proposed working area at each proposed tower location. The observer comments that the 30 m X 30 m working area *"will result in this total area being sterilised for the "entire" duration of the works and not just the programmed works duration."*

Applicant's Response:

72 In Section 7.3.4 of Volume 3B, the construction programme is outlined over five separate stages. For foundation construction *"it is estimated that Stages 1, 2 and 3 would cumulatively take 7-17 days for standard installation or 9-21 days for piling installations"*. The lands will be available after these works. For stages 4 and 5, *"Lands will be preliminarily reinstated and contractors will return approximately 12 months later for 8-12 days to complete the works and final land reinstatement."* As such, the lands will be available to the landowner during the 12-month interval between Stages 1, 2 and 3 and Stages 4 and 5.

6.4.5.2 Reinstatement of Lands

73 At Page 11 of the submission the observer comments that *"the EIS does not does not go far enough, how can this item be accurately described?"*.

Applicant's Response:

74 In Section 7.3.4.5 of Volume 3B of the EIS it is noted that *"once all works are complete, the access route and the construction areas around the OHL towers are reinstated as close as possible to their original condition. Generally this work is carried out by a specialised agricultural contractor and is carried out in accordance with the relevant ESB / IFA Code of Practice for Survey, Construction and Maintenance of OHL in relation to the rights of Landowners and in consultation with the individual landowner."* This relates to standard land reinstatement which an agricultural consultant can complete.

75 The observer is referring to their concerns about *"the Geological / Mining Heritage of Lemgare, Lisdrumgormal and Annaglogh"*. The observer's concerns on this matter are dealt with in detail in **Section 14** of this report.

7 ELECTRIC AND MAGNETIC FIELDS (EMF)

7.1 OVERVIEW

- 1 Electric and Magnetic Fields (EMF), including Animal and Human Health, was raised as an issue in approximately 790 no. of submissions / observations. These submissions are listed in Table 17 of **Appendix 1.2** of this report.
- 2 The topic of EMF considers the characteristics and background levels of EMF found in everyday environment, and the projected effect of the new transmission circuit on EMF levels under and around the proposed transmission line. There are a number of recurring issues raised in the submissions in relation to EMF. The number and breakdown of submissions / observations in which issues regarding EMF and Animal and Human Health were raised is listed in Tables 18 and 19 respectively of **Appendix 1.2** of this report.
- 3 The presence of electric and magnetic fields (EMF) associated with the operation of the proposed line was raised as an issue in the vast majority of submissions. However, the topic was raised in the same manner in a number of submissions to the Board.
- 4 The Environmental Impact Statement (EIS) describes the characteristics and background levels of EMF found in the everyday environment, and the projected effect of the new transmission circuit on EMF levels under and around the proposed transmission line. The EIS also summarises the current state of scientific research on EMF in regard to human and animal health. While most submissions on EMF referenced concern about human health, a smaller number raised concern about animal health, particularly livestock. Virtually none of the submissions acknowledged that the EIS had discussed both general and specific health concerns. The responses below point to sections of the EIS where research addressing these concerns is reviewed, and in a few instances refers to other reports that were released after the application was submitted to the Board.

7.2 RESPONSE TO GENERAL ISSUES RAISED

- 5 The expected levels of EMF around the proposed line are summarized in Chapter 8 Electric and Magnetic Fields (EMF) of Volume 3B, and Chapter 5 Human Beings Electric and Magnetic Fields in Volumes 3C & 3D. Chapter 8 of Volume 3B describes EMF levels which are common to both the Cavan Monaghan Study Area (CMSA) and the Meath Study Area (MSA). Chapter 5 of Volume 3C summarises the EMF levels associated with the proposed OHL, as it pertains to the line route in the CMSA. Chapter 5 of Volume 3D summarises the EMF levels associated with the proposed OHL, as it pertains to the line route in the MSA. While the expected levels of EMF around the line in the CMSA and MSA are slightly different, the issues raised about potential effects of EMF apply to all sections of the line route. Chapter 8 of Volume 3B summarises research on EMF exposure (Section 8.2), compliance with exposure guidelines (Section 8.4), EMF health research (Sections 8.5.1 to 8.5.9), plant research (Section 8.5.10), animal research (Section 8.5.11), and a discussion of the precautionary principle as applied to EMF in this project (Section 8.6). The relevant section, chapter, or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

7.2.1 Potential Impact on Humans

- 6 A great many of the submissions expressed concerns about effects of EMF on human health and mentioned cancers affecting children and adults such as those affecting the blood (leukaemia), brain, breast, and other tissues. A few submissions mentioned concerns about potential effects on the heart, reproductive outcomes, Alzheimer's and other neurodegenerative diseases, and non-specific reactions to EMF, collectively described as electromagnetic hypersensitivity.

Applicant's Response:

- 7 Research on EMF in relation to all of these topics has been reviewed by scientific panels for multiple national and international agencies including those convened by the Irish Department of Communications, Marine and Natural Resources (DCMNR), the National Institute of Environmental Health Sciences (NIEHS), the International Agency for Research on Cancer (IARC), the World Health Organisation (WHO), the International Commission on Non-Ionising Radiation Protection (ICNIRP), the EU's European Health Risk Assessment Network on Electromagnetic Fields Exposure, the National Radiological Protection Board (NRPB) of Great Britain, the Health Council of the Netherlands (HCN), and the Swedish Radiation Protection Authority, and the European Commission's Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR).

- 8 Chapter 8 of Volume 3B reviewed these assessments in Section 8.5.3 and concluded:

"In summary, the national and international agencies with the responsibility for protecting the health of persons in Ireland, Europe, and other countries have stated that the evidence does not indicate that ELF EMF causes any adverse health effect. They recognise that the main source of uncertainty lies with a weak but consistent association observed in some epidemiology studies that has not been confirmed or explained in experimental studies. They all recommend further well-designed research studies and continue to monitor the research and re-examine their positions periodically as new data become available" (Section 8.5.3.1, p. 8-20).

- 9 The report commissioned by the DCMNR is quoted in this section of the EIS as drawing the conclusion:

"There is limited scientific evidence of an association between ELF magnetic fields and childhood leukaemia. This does not mean that ELF magnetic fields cause cancer, but the possibility cannot be excluded. However, considerable research carried out in laboratories has not supported this possibility, and overall the evidence is considered weak, suggesting it is unlikely that ELF magnetic fields cause leukaemia in children. Nevertheless the evidence should not be discounted and so no or low cost precautionary measures to lower people's exposure to these fields have been suggested" (DCMNR, 2007, p. 3)" (Section 8.5.3.2, p. 8-20).

- 10 In addition, other sections of Chapter 8 of Volume 3B, review current research developments relating to EMF and epidemiologic studies of childhood cancer, breast cancer, adult leukaemia, and brain cancer, as well as studies of cardiovascular disease, reproductive outcomes, neurodegenerative diseases, and electromagnetic hypersensitivity. The EIS also discusses animal (in vivo) studies relevant to cancer development processes,

models for the study of childhood leukaemia, production of melatonin, and neurobiological, reproductive, and developmental effects, as well as laboratory (in vitro) studies relevant to the development of cancer.

- 11 Further discussion of the conclusions of national and international scientific agencies and key recent studies is provided in the report "*Overview of Scientific Assessments of Research on ELF EMF and Health, and Epidemiologic Studies, 2007-2015*" included in **Appendix 7.1**.
- 12 In summary, the information included and reviewed in the EIS and related reports do not provide scientific support for the level of concern expressed in submissions that included comments about general health issues related to EMF. Responses to specific concerns that appear to be raised mostly by persons in a subset of those submissions are provided in **Section 7.4** of this report not necessarily covered by general responses.

7.2.2 Potential Impact on Livestock

- 13 The topics of major interest ranked in descending order of the number of submissions were cattle, horses, and livestock (in general). In more than 20 submissions a variety of concerns about effects of EMF on cattle including dairy cows as regards their health, breeding and productivity, were noted. A similar number of submissions raised concern about potential effects of EMF on horses. These concerns focused principally on alleged knowledge of the persons making submissions that EMF from the line would affect health, behaviour, stress responses, and handling of horses. A smaller number of submissions expressed concerns about livestock in general and non-specific concerns were raised about sheep, pigs and chickens in a few submissions

Applicant's Response:

- 14 Cows have been one of the most investigated species of livestock for reactions to EMF in experimental field and laboratory studies. Studies on dairy cows, for example, failed to find any consistent variation in fertility, hormone levels, milk fat content or dry matter intake beyond what would be expected due to normal variation even when exposed to electric and/or magnetic fields far stronger than would occur from the proposed 400 kV line. Substantial research has examined the effect of EMF exposure on the weight gain, wool production, behaviour, onset of puberty and immune function of sheep. Summaries of the research that evaluated responses to EMF from transmission lines and experimental sources are provided in Section 8.5.11 of the EIS and in the "*Review of Research on Livestock and Crops in Relation to Electric and Magnetic Fields from High Voltage Transmission lines*" in **Appendix 10.1**. The WHO has stated "[s]tudies performed to date have found little evidence of EMF effects on fauna at levels below ICNIRP's guideline levels. In particular, there were no adverse effects found on cattle grazing below power lines" (http://www.who.int/peh-emf/publications/facts/envimpactemf_infosheet.pdf).
- 15 Concerns about horses focused principally on alleged knowledge of the persons making submissions that EMF from the line would affect behaviour, stress responses, and handling. Horses have not been a species of interest to scientists conducting EMF research; however, research on a variety of other experimental, farm, and wild animals has not identified adverse effects on any of these diverse species, a conclusion which would be expected to apply to horses as well. The substantial body of research on both livestock and other animals is informative for all large mammals and does not indicate any adverse effects

from transmission lines. Thus, there is no scientific basis in the research literature to conclude that the presence of EMF from transmission lines would create conditions that would impair the health of horses or would precipitate abnormal behaviour. While under the line under some conditions people as well as horses might be able to detect the presence of the electric field from the overhead conductors, such sensations are subtle, not harmful, and easily habituated to. A report prepared for EirGrid by Michael P. Sadlier of *Equine Psychology on Behaviour* provides insights about horse behaviour (<http://www.eirgrid.com/media/EirGridEquineReviewAppendix3.pdf>).

7.2.3 Potential Impact on Crop / Vegetation

16 Several submissions mentioned the transmission line / EMF as a potential concern for crops or vegetation.

Applicant's Response:

17 Considerable research has been performed to assess potential adverse or beneficial effects of transmission lines or experimental EMF sources on crops and plants. This research is discussed in Section 8.5.10 of Chapter 8, Volume 3B of the EIS and in the "Review of Research on Livestock and Crops in Relation to Electric and Magnetic Fields from High Voltage Lines" in **Appendix 10.1**. Altogether this research does not provide any reliable evidence for effects that would be harmful to crop yield or production even for transmission lines operating at voltages more than double that of the proposed 400 kV line.

18 In theory the presence of the transmission line could enhance the deposition of particles on crops and vegetation by infinitesimal amounts as do natural conditions of wind and the atmospheric electric field. Based on analyses done for deposition on skin, however, the deposition is too small to be a plausible cause of increased disease incidence (WHO, 2007).

7.2.4 Potential Impact on Other Animals

19 In comparison to the many submissions that raised concerns about EMF with respect to horses and cattle, relatively few submissions registered concern about wild or domestic birds, and, although many general concerns were raised about potential impacts of the proposed line on wildlife, only a few mentioned bats and fish as species of concern.

Applicant's Response:

20 While much EMF research has focused on human and other mammalian species significant research has also addressed potential effects of EMF on avian and some other species as well. Research has not shown that domesticated animals, including chickens exhibit adverse responses to EMF. This applies even to exposures to EMF levels above that associated with the proposed line and under constant exposure. As for wild birds, research has focused on impacts of transmission lines on population abundance; the weight of the evidence from these studies suggests that any difference between populations near and far from transmission lines have been attributed to differences in habitat, not to EMF. Laboratory studies have also been performed but the focus has been on the responses of birds to alterations in the earth's static magnetic field, which is widely recognized in playing a behavioural role in orienting and navigation. Research on the mechanisms involved in these avian responses indicated that frequency differences between static (0 Hertz [Hz]) and alternating current (AC) 50 Hz magnetic fields are of particular significance, as the

higher frequency 50 Hz fields characteristic of the transmission lines and other parts of the Irish electric system have little ability to be detected and acted upon by birds whose magnetoreceptors have been finely tuned over millennia to respond to the static magnetic field of the earth. There is good evidence that one mechanism that accounts for the ability of bees, fish, and bats to respond to the earth's magnetic field is similar to one hypothesized to account for migrational behaviour of birds in relation to magnetic fields, and so these species would be little affected if at all by EMF oscillating at a frequency of 50 Hz.

7.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

7.3.1 Response to Specific Issues raised by Prescribed Bodies

- Meath County Council Elected Members (SI-2015-0002) or Meath County Council (SI-2015-0216): The following concerns were raised by the Councillors...
 - That the overhead lines will have a negative impact on the health of populations living close to the line of the interconnector" (Submission 0002, p. 2).
- SI (2015) 214 – Cavan County Council states *"Some members of the community have concerns with regard to electric and magnetic fields caused by over ground high voltage transmission. It is unclear from the drawings submitted where the 400KV line is in proximity to occupied dwellings in Co. Cavan. The EIS states that some epidemiology studies have reported statistical associations between higher long term exposure to magnetic fields and childhood leukemia in particular. The report also states however that the EMF emissions will comply with the International commission on Non-Ionising Radiation Protection and European Union guidelines on exposure. It is accepted that this is a contentious issues and I recommend this be considered by An Bord Pleanála who will be better placed to consider expert advice in this specialized field"* (Submission 214, pp.20-21).
- SI (2015)-0215 – Monaghan County Council: The following concerns were raised in comments by elected members:

"3.6 Impact Upon Human Health

 - *... As the Department of the Environment, Community and Local Government Panel on Electromagnetic Fields had not yet reported, consideration of the application is inappropriate.*
 - *The food chain could be affected as grass eaten by milk producing cows and cattle could be tainted by the overhead power lines and this milk and beef could then enter the food chain ...*
 - *The health impacts of the development is [sic] the most important aspect and more information should be made available on the potential and perceived health impacts of the project"* (Submission 215, p. 71).
- SI (2015) 210 – Health Service Executive (HSE). The submission states in respect of 'Electromagnetic Fields':

“A number of papers were reviewed when researching the potential adverse health impacts of exposure to electromagnetic fields. The “Expert Group on Health Effects of Electromagnetic Fields, Report 2006” provides science based policy advice to an Irish Interdepartmental Government Committee. The World Health Organisation established the International EMF Project and reports of their findings were reviewed. The EU Scientific Committee on Emerging and Newly Identified Health Risks published a report on potential health effects of exposure to electromagnetic fields in 2013 which was also looked at. Based on the weight of research we are satisfied that as long as the development complies at all times with the international exposure limit guidelines as established by the International Commission on Non-Ionising Radiation Protection (ICNIRP) there will be adequate protection for the public from any Electromagnetic Field Sources” (Submission 210, pp. 3-4).

Applicant's Response:

- 21 The elected members of Meath County Council raised concerns about health risks to nearby populations presumably related to EMF and this is addressed in Chapter 8, Volume 3B of the EIS.
- 22 The Cavan County Council submission noted the concern of members of the community about EMF and development compliance with ICNIRP and EU guidelines. The proposed line meets ICNIRP and EU guidelines as confirmed by calculations presented in Volume 3B of the EIS and Chapter 5 Human Beings Electric and Magnetic Fields, Volumes 3C and 3D of the EIS. The Council recommended that this be addressed by the Board and experts in this field. Distances between dwellings and the proposed 400 kV line, for dwellings located within 200 metres of the centreline, are shown in the series of drawings MT-004-001 to MT-004-072 that forms part of the application. The sheets relevant to County Cavan are MT-004-025 to MT-004-031.
- 23 The elected members of Monaghan County Council suggest that it is “inappropriate” for the Board to consider the merits of the application in the absence of a new report by the Department of the Environment, Community and Local Government Panel on Electromagnetic Fields. A wealth of scientific evidence, and the reports referenced therein, on the topic of EMF and health have been included in the EIS. It is therefore respectfully submitted that the absence of any proposed new report should not prevent the Board from making its assessment on the matter. In addition the submission of the HSE should also be noted in this regard.
- 24 No health or scientific panel convened by national and international agencies has ever suggested that EMF would contaminate grass or food. Any variation in the deposition of ambient components of the air around the line on grass or crops would be too small to measure and would be insignificant compared to that introduced by environmental factors including farming. In scoping issues for evaluation in the EIS, EirGrid gave great attention to EMF and the bulk of Chapter 8 Electric and Magnetic Fields (EMF) provides information to Prescribed Bodies and the Board to respond to concerns about health. In addition, as part of its Grid 25 Initiatives EirGrid has published the assessments “*Overview of Scientific Assessments of Research on ELF EMF and Health, and Epidemiologic Studies, 2007-2015*” included in **Appendix 7.1** and “*Review of Research on Livestock and Crops in Relation to Electric and Magnetic Fields from High Voltage Lines*” included in **Appendix 10.1** to address potential and perceived impacts to human and animal health arising from its projects.

7.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

7.4.1 Humans

7.4.1.1 Childhood Leukaemia

25 Of the submissions that identified specific studies as supporting their concerns, most related to epidemiologic studies of childhood leukaemia, and the assessment by the IARC that an association with magnetic fields was noted in aggregate where long-term average exposures equalled or exceeded 0.4 μ T.

26 Multiple references were made to Dr. Maria Feychting who reported on a study on this topic in 1993. Another epidemiologic study by Draper et al. (2005) was the subject of widespread publicity because of an association where the birth addresses of children with leukaemia, but not other cancers, were slightly closer to overhead high voltage transmission lines than matched control children without leukaemia.

Applicant's Response:

27 The epidemiologic studies of childhood leukaemia and their review by IARC and other national and international bodies are thoroughly discussed in Section 8.5.4 Epidemiology Research into Potential Association between ELF EMF and Childhood Cancer of Chapter 8, Volume 3B of the EIS.

28 While both the Draper et al. (2005) and Feychting et al. (1993) studies have contributed to the literature on this topic, more recent epidemiologic research has shed more light on this association. Overall, the newer studies reviewed indicate no association between childhood leukaemia and residential proximity to high voltage transmission lines (Sermage-Faure et al., 2013, in France; Pedersen et al., 2014, in Denmark; and Bunch et al., 2014, in the United Kingdom). The latter study is particularly relevant because it describes updated analyses by the Draper et al. (2005) study team to account for more transmission lines and a longer study period in a greater geographic area.

29 The EIS discussed the largest study to date, Bunch et al. (2014), as follows: "This study provided an extension and update to the 2005 UK study by Draper et al. The authors extended the study period by 13 years (1962-2008), included lower voltage lines (132 kV) in addition to 275 /400 kV lines, and included Scotland in addition to England and Wales in their analyses. Bunch et al. included over 53,000 childhood cancer cases and over 66,000 healthy control children and reported no overall association with residential proximity to 132 kV, 275 kV, and 400 kV power lines for leukaemia or any other cancer among children. The statistical association with distance that was reported in the earlier Draper et al. (2005) study was not apparent in the extended analysis [emphasis added]" (Section 8.5.4 Epidemiology Research into Potential Association between ELF EMF and Childhood Cancer, Chapter 8, Volume 3B, p. 8-22 to 8-23).

7.4.1.2 Pacemakers

30 Multiple submissions expressed concern about potential effects of the proposed line on implanted pacemakers.

Applicant's Response:

- 31 This topic was considered in Section 8.5.9 Potential Interference with Implanted Medical Devices of Chapter 8, Volume 3B of the EIS. The European Committee for Electrotechnical Standardization recommended that persons with active implanted medical devices (AIMD) such as pacemakers should not exceed reference levels of 5.0kV/m and 100µT. Considering this guidance, the EIS states:

“For the transmission line configurations proposed as part of this project, the general magnetic-field reference levels will not be exceeded over any portion of the line and the electric field level will be above the 5.0kV/m reference level only within approximately 17m of the transmission tower centreline. For the majority of people, exposure to field levels in excess of the reference level would occur only for a very short term or transient periods in which case these exposures may be acceptable for AIMD” (Section 8.5.3.1, p. 8-36).

7.4.1.3 References to EMF Reviews and Assessments

- 32 Several submissions made reference to reports or Internet sites that appeared to support the authors' opinion that EMF from the proposed line are harmful. These included references to the Stakeholder Advisory Group on ELF EMFs (SAGE) report and the BioInitiative report. The BioInitiative report was assembled by an *ad hoc* group of scientists and other persons who assembled for the express goal of presenting information in support of their notion that “current public exposure standards for non-ionizing electromagnetic radiation are no longer good enough to protect public health.” They published their report on the Internet in 2007 and updated it in 2012. Another review of EMF research referenced by some of the submissions was conducted by three scientists from the California Department of Health Services (CDHS) in 2002.
- 33 In all the submissions, there were surprisingly few references to reviews by public health and scientific agencies. Most referred to the review performed by a Working Group for the IARC, a division of the WHO, that in 2002 categorised the statistical association between childhood leukaemia and long-term average magnetic-field levels $\geq 0.4\mu\text{T}$ as providing limited evidence for a possible link to cancer.
- 34 Another submission attached a fact sheet prepared by the U.S. National Cancer Institute titled “Magnetic Field Exposure and Cancer” as a basis for health concerns (<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet>).
- 35 A further submission expressed concern that because the recent assessment by the SCENIHR (2015) included a section recommending additional research, the report “is not reassuring to those living along the routes of high voltage lines.”

Applicant's Response:

- 36 The SAGE group in the United Kingdom was assembled in 2007 and included representatives of government, electric utilities, and anti-pylon groups. The members issued a report that summarised approaches to address public concern about EMF and transmission lines. A subsequent report addressed EMF from distribution lines. Both explored possible options to minimise public exposure to EMF as a component of a precautionary approach to EMF and to make practical recommendations to Government. Recommendations for specific distances from transmission lines, although evaluated and

presented as an option, were not recommended by SAGE, the Health Protection Agency or the Health Department of the UK government. It was not included as a recommendation primarily because SAGE's cost benefit analysis did not support this option and that it was considered disproportionate given the evidence base on the potential health risks arising from exposure to EMF (HMG, 2009). The recommendations of SAGE that were supported by the Health Department of the UK and which are most relevant to transmission lines included selecting the optimal phasing for new lines adjacent to existing lines and providing information about EMF to the public. Both these recommendations have been pursued by EirGrid in the preparation of the EIS, i.e., the possibility of optimally phasing the proposed line in the MSA route section where it is configured on double circuit towers to reduce magnetic fields as described in Section 5.5.3.3 Magnetic Fields Associated with Double Circuit Lattice Tower Configuration, and in other EMF communication outreach activities.

37 As described in Section 8.5.3.3 Reviews of ELF EMF Health Studies by Other Groups in Volume 3B of the EIS (pp. 8-20 and 8-21), the conclusions of the BioInitiative report and the CDHS report are inconsistent with the conclusions of a number of comprehensive weight of evidence reviews of the EMF scientific literature on potential health effects conducted by authoritative national and international health and government agencies (e.g., IARC, WHO, NIEHS, NRPB, DCMNR, SCENIHR). The main reasons for the inconsistent conclusions were that neither the BioInitiative report nor the CDHS report relied on a comprehensive review of the relevant scientific literature and a weight of evidence evaluation of the entire available evidence base. Rather, these reviews gave disproportional weight to positive studies, without due consideration of study quality, and generally dismissed studies that did not support their conclusions. The conclusions of the BioInitiative report and the CDHS report do not represent a consensus opinion but opinions of the individual contributors. The BioInitiative report was heavily criticised by scientific and government agencies, including the HCN, the Australian Centre for Radiofrequency Bioeffects Research, the EMF-NET Steering Committee of the European Commission, and the Committee on Man and Radiation of the Institute of Electrical and Electronics Engineers, for not following well-established scientific methods of risk assessment; and none of these agencies considered the conclusions of the BioInitiative report valid or compelling. The conclusions of the CDHS were not relied upon by decision making authorities due to the methods used in their report. For example, the California Public Utilities Commission (CPUC) concluded in its January 2006 decision that “a direct link between exposure to EMF and human health effects has yet to be proven despite numerous studies, including a study ordered by the CPUC and conducted by DHS [i.e., CDHS]” (CPUC, 2006, p. 19).

38 As explained by IARC (see Section 8.5.2, The Weight of Evidence Evaluation of Carcinogenicity and Section 8.5.3.1 Conclusions of International Review Bodies at pp. 8-17 to 8-19 of Chapter 8, Volume 3B of the EIS), a reported statistical association does not mean that magnetic fields are a cause of cancer because the role of chance, bias, and confounding in producing this association could not be ruled out. The WHO in 2007 and the Irish panel convened by DCMNR in 2007 reiterated this view. Although a number of recent large epidemiologic studies have not confirmed this association as discussed in Section 8.5.4 Epidemiology Research into Potential Association between ELF EMF and Childhood Cancer, the factors that accounted for the association in some older studies is not known.

39 The US National Cancer Institute reports “[currently, researchers conclude that there is little evidence that exposure to ELF-EMFs from power lines causes leukaemia, brain tumors, or any other cancers in children.” Importantly, the NCI also concludes that “[n]o

mechanism by which ELF-EMFs could cause cancer has been identified. Unlike high-energy (ionizing) radiation, ELF-EMFs are low energy and non-ionizing and cannot damage DNA or cells directly [and] ...studies of animals exposed to ELF-EMFs have not provided any indications that ELF-EMF exposure is associated with cancer" (<http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet>).

- 40 The suggestion that the SCENIHR (2015) report leaves open significant doubt about the safety of exposure to EMF because additional research was proposed fails to appreciate that the research recommendations proposed by SCENIHR were designed in large part to replicate previous research studies. Rather than regarding the safety of EMF as a settled matter based on existing research, SCENIHR is following the standard scientific process to demonstrate safety (and pursue scientific curiosity) by repeated testing of hypotheses. Science cannot prove the absence of harm (i.e., prove the negative) except by showing that despite repeated testing harmful effects are not observed at particular levels of exposure. The large amount of scientific evidence accumulated after almost 40 years of intensive scientific research has not confirmed the existence of any adverse health impact from low level EMF exposure. As discussed in the "Overview of Scientific Assessments of Research on ELF EMF and Health, and Epidemiologic Studies, 2007-2015" in **Appendix 7.1**:

"In 2015, the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) issued its opinion report in which the Committee concluded that research published between 2009 and 2014 did not confirm any adverse health effects of EMF exposure. The conclusions of the 2015 SCENIHR review were consistent with the conclusions expressed in earlier reviews and with the conclusions of the DCMNR report and the Environmental Health Criteria report of the World Health Organization. Overall, the SCENIHR report did not conclude that the evidence confirms the existence of any adverse health effects. With respect to childhood leukemia, the SCENIHR recognizes the reported epidemiologic associations, but due to the lack of known mechanism and the lack of supportive animal data, it does not consider the association to be causal" (Appendix 7.1, pp. iii-iv).

- 41 This should provide reassurance, because any substantive effects, if they exist, are likely to have been discovered by now. The scientific research is continuing to reduce remaining scientific uncertainty and to make sure that even a small potential impact has not been overlooked or missed.

- 42 The WHO reports that:

"Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields. However, some gaps in knowledge about biological effects exist and need further research" [emphasis added] (<http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>).

- 43 The WHO goes on to point out "despite extensive research, to date there is no [reliable] evidence to conclude that exposure to low level electromagnetic fields is harmful to human health" (<http://www.who.int/peh-emf/about/WhatisEMF/en/index1.html>).

7.4.1.4 Corona Ions

44 A handful of submissions referenced or quoted statements from presentations or writings by a physicist at Bristol University, who alleges that health effects, including cancer, might be expected from exposure to what are sometimes called corona ions from transmission lines.

Applicant's Response:

45 Electric charges in air occur naturally as a result of releases from the soil, combustion processes, and from moving water as in showers, waterfalls, and boiling water in tea kettles. In addition, researchers as long as 80 years ago reported that at discrete points on the surface of high-voltage transmission line conductors the resistivity of the air can break down, particularly in foul weather, with the release of small amounts of energy. One effect of these discharges, termed corona, is to increase electric charges on air molecules and small particles (corona ions). Other effects include a humming or crackling sound and interference to amplitude-modulated radio reception.

46 The voltage on a transmission line changes its polarity 50 times each second. During the positive half cycle of the voltage on the conductor, negative small air ions formed by corona are attracted to the conductor while positive small air ions are repelled. As the conductor voltage becomes negative during the next half cycle the positive small air ions are pulled back into the conductor and any negative small air ions are repelled. Because of this rapid alternating process, most air ions that are formed are recaptured by the conductor, but some escape and migrate to the ground or attach to passing liquid or solid particles (aerosols).

47 This process would just be of interest to engineers and physicists except that physicists at a UK laboratory have hypothesized that excess charge on particles: a) increases the retention of small particles in the respiratory tract and b) disrupts diurnal patterns in the secretion of the melatonin hormone (Fews et al., 1999; Henshaw et al., 2008). Studies indicate, however, that measurements of the static electric field as relied upon by Henshaw et al. cannot provide accurate estimates of charges on particles at ground level (Jayaratne et al., 2008; J-Fatokun et al., 2008). Other empirical and theoretical studies also provide little support for the idea that transmission lines are strong sources of corona ion exposures. Bracken et al. (2005) reported that long-term measurements of air ion concentrations and direct current electric fields upwind and downwind of 230 kV and 345 kV lines at two locations indicated a much smaller effect of these lines on potential exposure to space charges (air ions or charged particles, or both) outside the transmission line right-of-way than predicted by Fews et al. (1999).

48 The calculated or measured influence of charge on deposition of particles in respiratory tract models is likely to be overstated. Jeffers (2005) has argued that models of charged particle deposition in the respiratory tract have not considered an important influence of temperature gradients, which could exert greater effects than charge on particle deposition. In 2006, he reported additional modelling and analyses of power lines and air ionisers that indicates that particles are unlikely to become sufficiently charged by power lines to increase deposition within the respiratory tract (Jeffers, 2006). Even unpublished measurements by Henshaw's laboratory of particle deposition in a mechanical model of the lung made with metal piping downwind of transmission lines indicate that the difference in deposition downwind and upwind of transmission lines is far smaller (1-6%) than previously suggested (up to 500%) based on the work of Cohen et al. (1998).

- 49 Research by Henshaw and his colleagues on corona ions has been the subject of reviews by multiple health agencies including the IARC in 2002, a comprehensive review by the NRPB in 2004, and the WHO in 2007. The conclusion of the WHO describes well the conclusions of these agencies:

“... it seems unlikely that corona ions will have more than a small effect, if any, on longterm health risks, even in the individuals who are most exposed. None of the three direct mechanisms considered above [including corona ions] seem plausible causes of increased disease incidence at the exposure levels generally encountered by people” (WHO, 2007b, p. 117).

- 50 More recently, Swanson et al. (2014) analysed data from a large epidemiologic study of residential proximity to transmission lines and childhood cancer in the United Kingdom (Bunch et al., 2014) to assess the potential effects of corona ions from power lines on cancer development among children. The authors relied upon models to predict exposure to corona ions using meteorological data on wind conditions and power line characteristics and proximity to residential address. Their results provided no empirical support for any effects of corona ions on cancer development.

7.4.2 Cows and Pigs

- 51 Multiple submissions contain a reference to a 2008 news article about a judge in a civil court ordering the operator of a French electricity company to pay damages for health effects in cows and pigs to a landowner, Mr. Marcouyoux, allegedly caused by a high-voltage transmission line.

Applicant's Response:

- 52 On March 1 of 2010 a Court of Appeal overturned this decision as follows:

“It therefore emerges from the various documents on file that there are certain indices with regard to possible electromagnetic incidents on cattle, however, there are also serious contrary and diverging elements, and there remain considerable uncertainties in this matter, so that given the explanations and data provided in this case, there are no grounds to establish a sufficiently characteristic link of causality.

Therefore, the preceding judgment is hereby annulled, and the pleas of Gaec Marcouyoux shall not be admitted” (p. 14).

- 53 Related submissions also confuse exposures to transmission line EMF with conducted currents and voltages from aberrant farm wiring and distribution service lines to farms that can produce shocks to animals when contacting equipment at dissimilar potentials. Transmission lines are not sources of conducted currents or voltages to animals as they do not connect to other equipment except at substations.

7.4.3 Horses

- 54 A form letter comprising at least seven submissions alleged that “[h]orses are very susceptible to EMF and develop lower red blood cell counts” (e.g., Submission 378, p. 51).

Applicant's Response:

- 55 A scientific basis for this allegation could not be identified from searches of the scientific literature indexed by Pubmed, a database of more than 25 million citations for biomedical literature from MEDLINE, life science journals, and online books maintained by the U.S. National Library of Medicine, or from searches on the Internet. The substantial body of research on both livestock and many other animals is informative for all large mammals and does not indicate any adverse effects from transmission lines.

7.4.4 Birds

- 56 A number of submissions made reference to a 2005 review by Fernie and Reynolds of studies on avian biology relating to EMF. Studies discussed in the review included those in which birds nested and breed on or near overhead transmission lines or had been exposed to EMF in experiments.

Applicant's Response

- 57 The Fernie and Reynolds review discusses but does not critically evaluate the studies it cites. Overall, no consistent differences between exposed populations and control bird populations have been reported with respect to nesting success (Steenhof et al., 1993), reproductive success (Gilmer and Wiehe, 1977; Hamann et al., 1998), embryonic development (Hill et al., 1993b), fertility, postnatal growth and maturation (Beaver et al., 1993), and abundance and richness of breeding and migrating bird populations (Hanowski et al., 1993). Monthly counts of birds near and far from a 1100 kV transmission line over six years were not related to the transmission line in shrub or forested regions (Rogers et al., 1980, 1981, 1982).
- 58 The concerns raised in submission appear to be based on publications by Fernie, the lead author of the review cited in the Fernie and Reynolds review. Therefore, it is important to understand what his studies actually report. Fernie exposed kestrels confined in laboratory cages to simulated exposures to a 735 kV line (30 μ T magnetic fields and 10kV/m electric fields) or lower field levels (2 μ T and 0.03kV/m). In one study, no effects of 14 day exposures on day-time melatonin levels were reported, while 42 and 70 day exposures had mixed effects (Fernie et al., 1999). Studies at multiple times during the day and more importantly at night-time would be needed to determine if the small differences that were observed reflected an overall effect of the fields or a just temporal shifting of the diurnal or seasonal variation in the melatonin cycle.
- 59 In another study (Fernie and Bird, 1999), 10 day exposure to EMF levels higher than in Fernie et al. (1999) had no effect on body mass for food intake but longer exposures increased the body mass of male birds after 56 or 70 days, which was also seen in a third study (Fernie and Bird, 2000a). The authors suggested that the heavier, higher EMF-exposed birds may explain greater fledging and reproductive success of EMF-exposed birds in a fourth study (Fernie et al., 2000b). A fifth study reported no differences between exposed and control birds with respect to clutch size, day from pairing to clutch initiation, length of egg development, and body mass, but higher EMF-exposed birds demonstrated better performance on most measures including fertility, mean egg volume, and yoke and embryo weight (Fernie et al., 2000c). A small difference (2.5%) in hatching success was observed in one year and a larger difference the next year of this experiment but this was balanced by a 24.3 % greater successful hatching of fledgling birds in the first year and equal (100%) successful fledgling hatches in both exposed and control birds in the second

year. A sixth study reported differences between exposed and control birds in total protein, hematocrit, and blood cell concentrations that were greatest in the first 42 days of exposure but which diminished thereafter to the end of the experiment at 70 days (Ferne and Bird, 2001). These responses likely reflect reactions to the behavioural stress of exposure to the strong electric field which will concentrate at the edges and tips of feathers when the wings are extended and cause annoying vibrations of the feather surface. This interpretation is consistent with an increase in the ratio of heterophils to lymphocytes in the blood, a commonly used indicator of stress in birds. The investigators' observation of the behaviour of birds exposed to EMF in the fifth experiment (Ferne et al., 2000c) as more active, alert, with females preening and resting less, is also consistent with increased sensory stimulation by the electric field. Over time there would be habituation to this stimulation but nonetheless, such constant stimulation in a confined cage would be expected to be stressful. Since in the wild birds can voluntarily select nesting positions on transmission towers where such surface effects are not annoying (and minimized), the stressful effects of forced exposure to strong electric fields in a laboratory condition would not occur.

- 60 In short, the inferences made in submissions regarding effects of EMF on birds from the proposed line based on a single review are misleading and not supported by the studies cited when evaluated in their entirety and the relevant conditions of exposure around the proposed line are considered.

7.4.5 Salmon

- 61 A submission raised concerns about potential effects on the ability of salmon to return to their native river and another, the health of fish stocks.

Applicant's Response:

- 62 The EMF levels beneath the conductors where the line crosses the Boyne or other rivers and streams will be relatively low. The electric field in water will be 500,000 to 1,000,000 times lower than in the air above, thereby preventing any meaningful electric field exposure to fish and other species in the water. While the magnetic field will not be appreciably attenuated by water, the intensity in the water will be lower than stated in the EIS. This is because the conductors above the River Boyne would be considerably higher than the minimum conductor heights that were assumed for modelling magnetic fields under the worst case scenario (see EIS, Section 8.5.11.5 Fish and Marine Species). Additionally, prolonged exposure is not a critical issue for most river species of interest because their normal activities take them away from the restricted area directly under the line where the magnetic field levels are the highest.
- 63 A variety of salmon, other fish, and eels are among marine species for which there is some evidence that they make use of the earth's geomagnetic field in navigation. While salmon may detect the geomagnetic field, their behaviour is governed by multiple stimuli including light, smell, and current flow. The principal hypothesis as to how these species are able to detect the earth's magnetic field involves the movement of tiny magnetic crystals coupled to sensory nerves in the head. The rate of oscillation of a 50Hz magnetic field, however, is too fast for a force to be effectively mechanically coupled to magnetite particles and it is unlikely that the brief and relatively low level exposure to 50Hz AC magnetic fields from the line would overcome other thermal and biological processes that govern migration (Adair, 1994). This is consistent with the finding that Atlantic salmon and American eels do not

show evidence of detection or behavioural response to 75Hz magnetic fields at an intensity of 50 μ T (Richardson et al, 1976).

- 64 A comprehensive review of studies of EMF on fish and other aquatic organisms commissioned by the US Bureau of Ocean Energy Management, Regulation and Enforcement did not report adverse effects of EMF or that species that make use of the geomagnetic field for navigation would be susceptible to interference by 50-60Hz fields (BOEMRE, 2011).

8 TRANSBOUNDARY IMPACTS, CUMULATIVE IMPACTS AND IMPACT INTERACTIONS

8.1 OVERVIEW

- 1 Given that the proposed development comprises part of an overall interconnection project between Ireland and Northern Ireland this topic considers the potential transboundary impacts from the proposed development located in counties Meath, Cavan and Monaghan on the environment in Northern Ireland.
- 2 Potential transboundary impact was raised as an issue in very few submissions. Rather the focus was on transboundary procedures i.e. whether transboundary impacts and information was made available to the public and whether the EIS is in compliance with the UNECE Espoo Convention on Environmental Impact in a Transboundary Context (these issues, which relate to statutory procedures are addressed in **Section 2** of this report). All submissions raising potential transboundary impact are listed in Table 20 in **Appendix 1.2** of this report.
- 3 Cumulative Impact was raised as an issue in approximately 29 no. of submissions / observations. This topic deals with potential cumulative impacts which primarily arise from the combined effects of a number of existing or proposed developments, in combination with the proposed development being evaluated, on a single receptor / source. These submissions are listed in Table 21 in **Appendix 1.2** of this report.
- 4 It does not appear that any submissions raised the issue of interactive impacts per se however, that is what may have been intended; accordingly, we provide a summary response of where such impacts are assessed in the EIS.
- 5 The number and breakdown of submissions / observations in which potential transboundary and cumulative impact development are listed in Table 22 in **Appendix 1.2** of this report.

8.2 RESPONSE TO GENERAL ISSUES RAISED

- 6 The topic of potential transboundary impacts is evaluated in Chapter 9, Volume 3B of the EIS and the Joint Environmental Report (Volume 4 of the application documentation). Cumulative Impacts and Impact Interactions are evaluated in Chapter 10 Cumulative Impacts and Impact Interactions, Volume 3B. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to particular issues raised by the observers.

8.2.1 Potential Transboundary Impacts

- 7 The main issue raised was in relation to whether the border river which forms the boundary between the two jurisdictions, and which runs close to Towers 106 and 105, has been assessed from an ecological perspective.

Applicant's Response:

- 8 It is submitted that a comprehensive evaluation of the potential transboundary impacts from the proposed development located in counties Meath, Cavan and Monaghan on the environment in Northern Ireland is set out in Chapter 9 of Volume 3B. A summary of transboundary impacts is also included in the Non-Technical Summary (Volume 3A, Section 5.15).
- 9 Section 9.2, Chapter 9 of Volume 3B outlines the potential transboundary impacts on human beings (Section 9.2.1), flora and fauna (Section 9.2.2), soils, geology and hydrogeology (Section 9.2.3), water (Section 9.2.4), air (Section 9.2.5), landscape (Section 9.2.6), material assets (Section 9.2.7) and cultural heritage (Section 9.2.8).
- 10 Of particular relevance to the particular submission referenced above is that the Clontibret Stream, which is the name of the watercourse which delineates the border in the areas of Towers 103 to 107, is specifically referred to in Section 9.2.4 (Water) of Volume 3B. Furthermore, the ecology section also identifies and considers the jurisdictional border from an ecological perspective that *“Badgers, Otters and Bats may have territories that straddle the jurisdictional border, the nature of the proposed electricity transmission development means that these species are unlikely to be significantly adversely affected”*.
- 11 It is concluded in Section 9.3, Chapter 9 of Volume 3B that based on the evaluations carried out by EirGrid and its consultants, for most environmental topics the transboundary impacts are predicted to range from none / positive / imperceptible to moderate (on the setting of an archaeological site in Northern Ireland); apart from localised significant landscape and visual impacts (specifically a locally significant effect on landscape character).
- 12 It should also be noted that transboundary impacts on the environment of Ireland from System Operator Northern Ireland's (SONI) proposals for that portion of the proposed interconnector located in Northern Ireland are reported separately in a separate consolidated Environmental Statement (ES) which has been appended to the application documentation submitted to the Board (see Appendix C, Volume 4) and associated Consolidated ES Addendum (Appendix D, Volume 4).
- 13 The publication by the European Commission (EC) of *Guidance on the Application of the Environmental Impact Assessment Procedure for Large-scale Transboundary Projects* (May, 2013), recognises that large-scale projects, physically located in more than one country (i.e. transboundary projects) are likely to have significant environmental effects in each country and involve many stakeholders. Accordingly, a *Joint Environmental Report* (JER) has been prepared by the respective applicants that cover the proposed interconnector from Turleenan, County Tyrone to Woodland, County Meath in a manner which assesses its overall effects and, in particular, cumulative and significant adverse transboundary effects, in a manner consistent with the approach suggested in the European Commission's guidance. The JER comprises Volume 4 of the application documentation. The purpose of the JER is to provide the reader with an overview of impacts and the transboundary issues of the proposed interconnector, taking into account the EU Transboundary Guidance document.

8.2.2 Potential Cumulative Impact and Impact Interactions

- 14 The main issue raised in relation to Cumulative Impact and Impact Interactions is the potential impact arising from proposed developments which have not yet have been

granted development consent and potential cumulative impacts arising from existing electricity infrastructure. Specific concerns include: potential cumulative impacts as a result of existing, planned and / or proposed windfarm developments in the area, in particular Emlagh Wind Farm; potential cumulative impacts on individual dwellings / landowners / farms where the proposed 400 kV OHL traverses exiting electricity lines on their land (38kV, 110kV and 220kV OHLs) and potential cumulative visual impact from the proposed development as a result of existing and/or proposed electricity infrastructure in close proximity to individual dwellings / landowners / farms. Other submissions refer to the 'in-combination' impact of the M3, telecommunications infrastructure and Tara Mines with the proposed development.

Applicants Response:

- 15 It is submitted that the potential Cumulative Impact of the proposed development in-combination with other proposed and completed developments has been comprehensively evaluated in Chapter 10 of Volume 3B. This includes an evaluation of the potential cumulative impacts arising from the proposed development in association with other developments, as well as the interaction between potential impacts on different environmental receptors arising from the proposed development alone. A summary of cumulative impacts is also included in Section 5.16 of Volume 3A (Non-Technical Summary). In addition the *Joint Environmental Report* (Volume 4) provides an overview of *inter alia* the cumulative impacts of the proposed interconnector.
- 16 Section 10.3, Chapter 10 of Volume 3B specifically considers the following proposed developments and their potential in-combination impacts with the proposed interconnection development within Ireland:
- Transmissions projects including proposed electricity transmission infrastructure developments (summarised in Table 10.1, Chapter 10, Volume 3B) and the SONI element of the proposed interconnector (Section 10.5, Chapter 10, Volume 3B).
 - Major or Strategic Infrastructure Developments (summarised in Table 10.2, Chapter 10, Volume 3B) including Emlagh Wind Farm development (Section 10.3.2.1, Chapter 10, Volume 3B), Maighne Wind Farm development (Section 10.3.2.2, Chapter 10, Volume 3B), existing electricity distribution line and telecommunications line crossings (Section 10.3.2.3, Chapter 10, Volume 3B), and other proposed developments.
 - Permitted developments in close proximity to the centre line of the OHL, with extant permissions are identified on the Line Route Map – Detail (1:2,500), contained in Volume 1B of the application documentation. Extant permissions in close proximity to the OHL are identified in Table 10.3, Chapter 10 of Volume 3B.
- 17 A number of the submissions raise concerns regarding the potential cumulative visual impact of the proposed development in-combination with proposed wind farm developments in the area, in particular **Emlagh Wind Farm**. It is submitted that a comprehensive evaluation of the potential cumulative impact of proposed wind farm developments in the study area was carried for the purposes of the application. In particular, Section 10.3.2.1 of Chapter 10, Volume 3B of the EIS outlines details of the proposed Emlagh Wind Farm, the location of which relative to the proposed North-South Interconnection Development is illustrated in Figure 10.2 of Chapter 10, Volume 3B. It is predicted that the cumulative effects of the proposed North-South 400 kV Interconnection Development in-combination with the Emlagh Wind Farm development will result in a localised intensification in the character of a landscape of energy generation.

- 18 A number of the submissions raise concerns in respect of the potential cumulative impact with **existing electricity infrastructure**. It is submitted that this has been adequately evaluated in the EIS. Section 7.3.4.1.2 of Chapter 7, Volume 3B of the EIS outlines the site enabling works for the proposed development including works to existing OHL crossings. In addition we refer the Board to Appendix 7.3 *North-South 400 kV Interconnection Development Identification and Resolution of Conflicts with Existing Overhead Line Infrastructure (2015)*, of Volume 3B Appendices. Section 10.4.7, Chapter 10, Volume 3B of the EIS notes that there are a number of areas within which the alignment of the proposed development crosses over or near to the existing power infrastructure. *“As a result, there is potential for significant localised cumulative landscape effects between Towers 130 and 131 in the townland of Drumsook at Drumgristin and Coogan’s Lough, County Monaghan and between Towers 233 and 234 in the townland of Corranearry (ED Enniskeen), County Cavan. Localised significant visual cumulative effects will occur between Towers 233 and 234 in the townland of Corranearry (ED Enniskeen), County Cavan.” (para. 65)*
- 19 A number of submissions from landowners, or on behalf of landowners, make observations relating to existing powerlines on their land. In relation to Land Use / Agronomy specifically, as noted in **Section 10** of this report, *“Cumulative effects of the existing 400 kV OHL, the 220 kV Arva – Louth OHL, the 220 kV Maynooth – Louth OHL, the 100 kV Lisdrum – Louth OHL, the 100 kV Louth- Rathrussan OHL, the 100 kV Arva - Navan OHL have been considered in the assessment of impacts in Appendix 3.1 of Volume 3C and 3D of the EIS”*.
- 20 Chapter 10 of Volume 3B, addresses potential Cumulative Impacts of the proposed development. As noted in Section 10.3.2.3 of Volume 3B, *“The proposed North-South 400 kV Interconnection Development crosses other existing transmission, distribution and telecommunications lines. This will result in localised cumulative visual impact at the crossing points; however, in the context of the extent of existing wire-scape across the study area, this impact is considered to be negligible”*.
- 21 One submission specifically raises concern regarding the cumulative impact of the proliferation of OHL’s out of Woodland. In this regard, it should be noted that proposed development will be strung along the existing double circuit section of 400 kV towers at Woodland 400 kV Substation. As such, there will not be a new 400 kV route constructed on the western boundary of the substation. The existing 400 kV double circuit section of towers is the only OHL line connection into Woodland 400 kV substation along the western boundary of the substation.
- 22 Section 10.6, Chapter 10 of Volume 3B sets out the evaluation of potential cumulative environmental effects for potential development which includes development proposals which have not yet been the subject of a planning application but which the project team is aware of from plans, strategies and / or local knowledge. This includes *inter alia* transmission infrastructure (including a future substation in the vicinity of Kingscourt), windfarm and other electricity generation proposals (in particular those subject to Gate 3 connection offers).
- 23 A number of the submissions raise concerns regarding the potential cumulative impact of the future construction of a substation near Kingscourt. It is submitted that this has been addressed in the EIS. Section 10.6.1.1, Chapter 10 of Volume 3B outlines the evaluation for potential cumulative environmental effects of the future substation in the vicinity of Kingscourt. It is noted in the EIS that while there is potential for cumulative landscape and visual effects arising from the future construction of a substation at the point of intersection of the proposed interconnector and the existing Flagford-Louth 220 kV OHL, near Kingscourt, the landscape effect will depend on the final location of the substation.

Site selection will seek to minimise adverse effects on ground contours and existing vegetation. The cumulative landscape and visual effects will depend on the exact location and design of the substation but will most likely be locally significant after construction, reducing as the screening effects of planting come into effect.

- 24 Section 10.6.1.2, Chapter 10 of Volume 3B outlines the evaluation for potential cumulative environmental effects of possible future Gate 3 project connection offers. It is noted in the EIS that there is also potential for cumulative landscape and visual effects arising from the possible future construction of the Gate 3 windfarm proposals. Notwithstanding this, the cumulative landscape and visual effects will depend on the exact location of the proposed developments but will most likely be locally significant for any windfarm with five or more turbines within 5km of the proposed development. The cumulative landscape and visual effects of the proposed development and potential windfarms further removed from the proposed development will reduce due to the increased distance, intervening topography and natural screening.
- 25 An evaluation of Impact Interactions is set out in Section 10.7, Chapter 10 of Volume 3B. Table 10.2, Chapter 10 of Volume 3B shows a matrix of significant interactions likely to occur between potential impacts arising from the proposed development; the level of interaction between the various topics will vary greatly. Summary details on each of the interactions anticipated are provided in Table 10.6, Chapter 10 of Volume 3B.

8.2.3 Joint Environmental Report (JER)

- 26 Other issues raised by observers include the JER – and the suggestion that the JER does not adequately address the cumulative effects with regard to other planned major energy infrastructure developments of a cross border nature.
- 27 In response, reference should be made to Chapter 17 of Volume 4 which specifically considers Cumulative Impacts & Interactions. Existing and proposed energy related developments are identified in Volume 4, Section 17.2.1 and also in Appendix B (in addition to other developments). Furthermore, it should be reiterated that the JER has been prepared in addition to the published Consolidated ES and EIS, and the JER takes account of the information which has already been provided within those documents. Accordingly, the JER is designed to complement the environmental impact statements submitted to the respective competent authorities in the two jurisdictions.

9 HUMAN BEINGS – POPULATION AND ECONOMIC

9.1 OVERVIEW

- 1 Population and Economic was raised as an issue in approximately 633 no. of submissions/observations. These submissions are listed in Table 23 of **Appendix 1.2** of this report.
- 2 This topic deals with concerns in relation to population and socio-economic issues. We have identified a number of recurring issues raised in the submissions. The number and breakdown of submissions / observations in which issues regarding population and socio-economic issues were raised is listed in Table 24 of **Appendix 1.2** of this report.
- 3 The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is

9.2 RESPONSE TO GENERAL ISSUES RAISED

- 4 The topic of Population and Economic is evaluated in Chapter 2 Human Beings Population and Economic, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.
- 5 This topic is closely related to Chapter 4 Human Beings Tourism and Amenities, as community amenities are used by the local population of the area where it is located and not just by tourists. There is therefore some overlap and cross referencing between the responses given in this section and Section 9.4 Human Beings – Tourism and Amenity.
- 6 Where responses are given to particular submissions and a subsequent submission raises similar issues, a reference is made back to the previous response rather than repeating the response.
- 7 In considering the responses to these submissions it should be noted that there are over 400 km of existing 400 kV OHLs from County Clare to County Kildare and County Meath and there is little evidence that many of the impacts alleged in the submissions related to this topic are actually occurring.

9.2.1 Potential Impact on Community and Recreational Amenity and Activities

- 8 Submissions in this category suggest that community facilities such as schools, GAA clubs and other sporting facilities and clubs will be negatively impacted by the proposed development. They refer to potential safety, health, visual, noise, ecological and other impacts which will be experienced by members of clubs and users of community facilities and that these will make such clubs and facilities less attractive to members and users.

- 9 Specifically, a number of submissions refer to the potential for negative impacts on schools and other educational institutes⁴.
- 10 In addition, a number of submissions refer to the potential for negative impacts on gaelic football, hurling and soccer clubs, angling clubs, gun clubs, gyms/fitness clubs, hunts, handball/racquetball, cycling and other clubs and the facilities/locations where these activities take place⁵. There are also submissions from other parties which express similar sentiments to those specific ones referred to above.

Applicant's Response:

- 11 EIS Volumes 3C & 3D Chapter 2 - Section 2.4.1.2 Settlement Patterns considers settlement patterns and community facilities where the proposed development is situated. It identifies and describes these and states that outside of the main settlements, there are many smaller more dispersed settlements and many single (one-off dwellings), both clustered and linear. It notes that this type of settlement is a feature of settlement patterns in all counties where the development is proposed and that community facilities, including schools, churches, clubs and community centres follow similar dispersed patterns to settlement and are often found outside smaller settlements.
- 12 The section identifies existing specific community facilities within 1km of the proposed development as these are considered to have the highest potential to be affected by the proposed development. It also identifies other villages outside of this distance and states that such villages typically include a school, church local shops and community facilities. Specific facilities identified in the EIS include Drumhowan Gaelic Athletic Association (GAA) club (approximately 330m east of Tower 150), Laragh National School and Church (approximately 410m east of Tower 230), Corcreaghagh National School (approximately 640m west of Tower 195), Ballintra Church (approximately 750m south-west of Tower 142) Ballaghnamearn National School (approximately 820m south-east of Tower 207), Oristown Church (approximately 150m west of Towers 302 and 303) and Robinstown National School (approximately 570m north-east of Tower 349).
- 13 Chapter 4 - Section 4.4.1 considers amenities and activities for the surrounding population where the proposed development is located. It identifies the location of amenities and attractions and describes the recreational activities and events which take place throughout the area where the proposed development is situated. These include angling,

⁴ Doohamlet National School (SI-2015-0011), Ballynagarn National School (SI-2015-0012), Parents Association of St. Oliver Plunketts National School (SI-2015-0164), Scoil Mhuire Robinstown National School (SI-2015-0438), Parents Association St. Ultans National School Bohermeen, (SI-2015-0466), St. Ultans National School Bohermeen, (SI-2015-0467), Bohermeen Toddler Playgroup (SI-2015-0476), Churchtown Music School (SI-2015-0495), St. Josephs National School (SI-2015-0522), Kilmainhamwood National School (SI-2015-0590), Robinstown National School (SI-2015-0691), KC Childcare Limited (SI-2015-0732), Kiltale National School (SI-2015-0760), Laragh Muff National School (SI-2015-0790), Robinstown parent and Toddler Group (SI-2015-0806), St. Josephs National School Staff and BOM (SI-2015-0826), St. Josephs National School Staff Parents Council (SI-2015-0827) and Laragh 2 National School (SI-2015-0891).

⁵ Kingscourt Stars GAA Club (SI-2015-0018), Kilbride Anglers Club (SI-2015-0134), Lough Egish Rod and Gun Club (SI-2015-0162), County Monaghan Regional Game Council (SI-2015-0169), Corduff-Raferagh Heritage Club (SI-2015-0242), Aughnamullan Gym and Fitness Club (SI-2015-0249), Corduff-Raferagh Active Retirement Group (SI-2015-0253), Monaghan Anti Pylon Committee (SI-2015-0278), Lough Egish Community Development Limited (SI-2015-0281), Aughnamullan GFC (SI-2015-0318), North East Pylon Pressure (SI-2015-0332), Bective Angling Club (SI-2015-0402), Ward Union Hunt Club (SI-2015-0407), Trim District Angling Association (SI-2015-0408), Dunsany GAA Club (SI-2015-0414), Kilmainhamwood GFC (SI-2015-0463), Kingscourt Handball and Racquet Club (SI-2015-0469), Gym an Ri (SI-2015-0470), Castlevilla AFC (SI-2015-0491), Moynalty Cycling Club (SI-2015-0500), Dunderry Gun Club (SI-2015-0565), Cremartin Shamrocks GAA Club (SI-2015-0638), Bailiboro Shamrocks GAA Club (SI-2015-0681), Cavan County Committee of the GAA (SI-2015-0690), Castletown and Nobber Gun Club (SI-2015-0703), Nobber Trout Angling (SI-2015-0705), Kiltale Hurling Club (SI-2015-0758), Rathkenny GAA Club (SI-2015-0759), Dun a Ri Angling Club (SI-2015-0784), Kingscourt Community Council (SI-2015-0791), Kingscourt Community Development Association (SI-2015-0792), Concerned GAAA Clubs of County Meath (SI-2015-0853), Dunderry GAA Club (SI-2015-0857), Clady Vintage Club (SI-2015-0861), Dunderry Set Dancing and Cultural Club (SI-2015-0862) and Kingscourt Scout Group (SI-2015-0902). There are also submissions from other parties including James and Mary McNally (SI-2015-0091), Cllr Seamus Coyle and Others (SI-2015-0118), Maria and Philip Fitzpatrick (SI-2015-0147), Maurice and Joanne McAdam (SI-2015-0171) and Andrew Clarke and Family (SI-2015-0277) which express similar sentiments to those specific ones referred to above.

hunting, shooting, equestrian, walking, cycling, driving, fairs and festivals, including Muff Fair, Dunderry Fair and Dunderry Festival and the Gibbstown Drive in Bingo.

14 Chapter 4 - Section 4.5.3 states that the presence of a new overhead line along its rural receiving environment will impact upon the general local amenity of the area and this may be perceived as reducing the attractiveness of the area for amenity related activities. It further states, however, that given the nature of an overhead line development this is unlikely to prohibit amenity activities taking place in the environs of the proposed development.

15 Chapter 2 – Section 2.8 and Chapter 4 – Section 4.8 identifies the interrelationships between the topic of Human Beings – Population and Economic and other chapters within the EIS where the potential for impacts referred to in the submissions cited above. It makes it clear that impacts on population are inherently interrelated to the environmental topics that are evaluated in the EIS and that mitigation measures are included in other chapters of the EIS to mitigate potential adverse impacts on human beings, arising from these other topics. It concludes that the main impact on community and recreational amenities, which is likely to be significant, arises from visual impacts.

Specific locations at schools, churches, sports grounds, fairgrounds, fishing lakes, etc. where specific residual impacts could potentially occur have been evaluated in the relevant chapters of the EIS.

16 Having regard to the residual impacts identified in the various specialist chapters, and from knowledge of other 400 kV OHLs in Ireland, and having regard to the various third party submissions, there is no evidence provided to suggest that the proposed development will directly affect the future use of community facilities, including schools and other educational institutes, churches, clubs and community centres. Certainly, such a scenario has not occurred across the country in the context of over 2,000 km of existing overhead power lines supported on lattice steel structures.

9.2.2 Potential Impact to Image Perception of Area/Town

17 Submissions in this category suggest that there will be a potential impact on the image and perception of an area or town in the vicinity of the proposed development. Many submissions refer to the introduction of “industrialised” structures into a rural community/landscape and that this will alter the image of the rural landscape and change the image or perception of an area.

Applicant's Response:

18 The image and perception of an area/town arises from the interrelationship of many factors including setting and surroundings, density and character of built form, heritage, local community, facilities, amenities, activities, etc. which combine to create a sense of distinctiveness, identity or perception of that particular area.

19 The image and perception of some areas where the proposed development is located is based around angling, where the lakes provide the basis for the activity and associated image and perception. The image perception of other areas of is based around walking, where for example the Monaghan Way provides the basis for the image and perception of the surrounding area. The image and perception of other areas is based around heritage

where for example the Boyne Valley Driving Route provides the basis the image perception of the surrounding area.

- 20 It is submitted that this image and perception of the receiving environment will not alter with the provision of linear infrastructure as proposed. The character of the environment will remain rural, dominated by fields and hedgerows, with existing housing and farm buildings, clustered settlements, and associated roads and other infrastructure.
- 21 Volume 3B Chapter 11 – Landscape and Appendix 11.2 RVIA in particular, provides an assessment of the visual impacts of the proposed development when introduced into these landscapes and shows that particular visual impacts are identified along the route. While there will be visual impacts arising from the proposed development in particular areas, this in itself will not alter the underlying character of an area which make it distinct from other areas, thereby creating its image and perception. In this regard, as the image and perception of an area is based on its underlying characteristics which are constantly changing and of which its visual setting on only one factor it is not considered the proposed development will significantly impact on the image or perception of the area.

9.2.3 Potential Impact on Local Economy (Job Creation)

- 22 Submissions in this category suggest that jobs could be “lost” as a result of the proposed development and that it will be more difficult to attract employment to areas affected by the proposed development. Other submissions suggest that the proposed development will support and underpin employment growth as a result of proving the type of electrical infrastructure required to attract large scale employment to areas outside the Greater Dublin Area.

Applicant's Response:

- 23 Sections 2.4.2 of EIS Volumes 3C & 3D, *Employment and Economic Activity*, Chapter 2 - describe the economy of CMSA and MSA respectively. Those sections refer to CSO statistics in describing the economic base of the counties, acknowledge that agriculture and related activities remain important but also state that employment trends are continuing to diversify and that the economic development strategies of Counties Monaghan, Cavan and Meath aim to continue this diversification across a wide range of sectors, thereby increasing employment and economic activity throughout the counties. The strategies all acknowledge the need to ensure adequate infrastructure, including energy infrastructure is in place to attract employment generating industries, which are likely to be attracted to the larger urban settlements.
- 24 However, the predominant economic and employment activities where the proposed development is located are based on agriculture. Related activities include agricultural suppliers (machinery, feed, etc.), processing and agri-tourism. Other employment sustaining activities are based around outdoor activities which attract tourists to the area including angling, walking, equestrian, fairs and festivals. Local services such as shops and schools generate additional employment.
- 25 The potential impacts on agriculture have been described in Chapter 3 of EIS Volumes 3C & 3D. From the conclusions of this chapter, where it is stated that the proposed development will have an imperceptible or slight impact on land parcels along the route of the proposed development, it is reasonable to conclude that job losses in the agricultural sector will not arise as a result of the proposed development.

- 26 In relation to other areas of employment, particularly those based around tourism, it is stated in Section 4.5.3 that the proposed development will not inhibit any tourist and amenity activities along the route and that there is future potential for the development of tourism where the proposed development is located, generally based on further development of existing activities and products. It is acknowledged that the landscape and land use of an area is an important factor in the development of tourism. It further states that there may be localised impacts on tourism and recreational amenities and the associated economic activities arising directly as a result of the proposed development (which are identified as being around some sections of the Monaghan Way and the section of the Boyne Valley Driving Route close to Bective Abbey). The location and extent of tourist facilities and attractions in the immediate and wider area is shown in Figures 4.1, *Tourism*, in Volumes 3C & 3D. The majority of existing facilities and attractions lie outside the route corridor, therefore these are likely to be unaffected directly by the proposed development.
- 27 Employment and economic activities are linked to many macro and local economic factors but given activities in the local area will not be directly inhibited; it is unlikely that job losses could arise as a result of the proposed development.
- 28 At a macro-economic level, the proposed development will ensure adequate infrastructure, including energy infrastructure is in place to attract employment generating industries, which are likely to be attracted to the larger urban settlements within the counties.

9.2.4 Potential Impact due to Proximity to Settlements/Population

- 29 Many submissions refer to the proximity of the proposed development to settlements and dwellings and arising from this there will be impacts on people. The types of impacts referred to in these submissions relate primarily to visual, health, land use, noise and traffic. Other impacts relating to other chapters of the EIS are raised additionally in many submissions.

Applicant's Response:

- 30 As detailed above, settlement patterns are considered and the potential impacts are described in the EIS. The distance to the nearest dwellings/structures shown in Volume 1A – Planning Drawings.
- 31 Section 5.3 of EIS Volume 3B sets out the process for selecting the location and route corridor of the proposed development. In that context, one of the criteria is the consideration of the potential for impacts on urban and rural settlements. Arising from that criteria, settlements which have larger concentrations of population were avoided in selecting the route corridor and this resulted in the route corridor being located in more rural areas. Following from this, as described in Sections 5.4 and 5.5 of Volume 3B, the design of the proposed development was finalised. As described in Sections 2.4.1.2 of EIS Volumes 3C and 3D, the predominance of scattered and one-off housing throughout the CMSA and MSA, which is a feature of settlement patterns in Ireland generally, has influenced the location of the overhead line. In order to minimise impacts on the population in the area where the proposed development is located, the aim has been to maximise the separation distance between the overhead line and dwellings.

- 32 As detailed previously, impacts on population are inherently interrelated to the environmental topics that are evaluated in the EIS and that measures are included in other chapters of the EIS to mitigate potential adverse impacts on human beings. The appraisal in the EIS that the main impact on residential amenity, which is likely to be significant, arises from visual impact; these issues are detailed in Chapter 11 – Landscape and Appendix 11.2 (RVIA) to Volume 3B.

9.2.5 Potential Impact on Community Events

- 33 Dunderry Fair Committee (SI-2015-0134) states that *“In the EIS no assessment is made of the impact upon Dunderry Fair.”* A number of submissions also refer to the potential for impacts on Muff Fair in County Cavan.

Applicant's Response:

- 34 Dunderry Fair and Dunderry Park Festival are described in EIS Volume 3D section 4.4.2.7. In section 4.5.3 it states that *“At a local level there are other attractions and activities which take place within the vicinity of the proposed development...including activities in Dunderry Park and House.....These activities have the potential to be impacted by the proposed development.”* This reference includes references to Dunderry Fair and Festival. This section goes on to state that despite the reduction in the visual amenity of these areas it is unlikely to prohibit recreational activities continuing at these locations.
- 35 Muff Fair is described in EIS Volume 3D section 4.4.2.7. The focal point of the fair, which spreads over a distance is approximately 200 metres from the proposed development. The visual setting of this fair will be impacted as shown in Volume 3C Photomontage 39. In section 4.5.3 of Volume 3C it states that the proposed development passes close to the site of Muff Fair and it may have some slight to moderate indirect impacts on the attractiveness and associated tourism and amenity value of the area, it concludes that despite the impacts on the visual amenities from the proposed development the annual fair can continue in the vicinity of the proposed development.

9.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

9.3.1 Monaghan County Council (SI-2015-0215)

- 36 Monaghan County Council does not make specific comments in relation to community amenity or recreational amenity and activities. However, other sections of the planning authority's report which have an interrelationship to issues of this type are 2.3 Impact on Landscape Heritage, 2.4 Impact on Areas of Amenity, 2.5 Impact on Views and Prospects and 2.6 Impact on lakes and their environs.

Applicant's Response:

- 37 **Section 2.3 Impact on Landscape Heritage and Section 2.5 Impacts on Views and Prospects:** Responses to the issues raised in these sections are addressed in **Section 16** of this report.
- 38 **Section 2.4 Impact on Areas of Amenity:** In relation to “Impact on Areas of Amenity”, it states in the submission that “it is considered that the EIS has adequately assessed the

potential for impact upon Areas of Primary and Secondary Amenity designated within the Monaghan County Development Plan 2013 – 2019”.

- 39 **Section 2.4 Impact on Lakes and Their Environs:** Responses to the issues raised in this section are addressed in **Section 14** and **Section 16** of this report.

9.3.2 Cavan County Council (SI-2015-0215)

- 40 In Section 4.4 of its submission, Cavan County Council notes that the proposed development is located 1.6km from the edge of Lough an Lea mountain, which is a locally designated amenity area and 2km from the walking route in this area. The Council acknowledges that Dun a Ri Forest Park will not be affected. The planning authority also notes that Towers 227 and 228 are in close proximity to Muff Cross, which is the site of the yearly horse fair, and concludes that the area around the Muff Fair site and Muff Lough will be particularly negatively impacted upon, due to the proximity of existing residential houses and agricultural homesteads and the proposed development will have a significant impact on the visual amenities of the community at this location and will change the area significantly.

Applicant's Response:

- 41 The visual amenities of the area around the Muff Fair site have been assessed and the potential impacts are presented in Volume 3C, Photomontage 39. As stated previously, however, despite the impacts on visual amenity in the area, the annual fair can continue in its historic location.

9.3.3 Meath County Council (SI-2015-0216)

- 42 Meath County Council in Section 6.3 summarises the relevant aspects of Volume 3D Chapter 2 – Human Beings Population and Economic. No specific submissions are made in relation to this topic. However, in Section 11.3 Conclusions it is stated that *“the importance of the provision of electricity infrastructure in the future development of the North-East Region and of County Meath is also acknowledged”*.

Applicant's Response:

- 43 It is accepted that Meath County Council acknowledges the importance of the provision of electricity infrastructure to the future development of the North-East Region and of County Meath, which supports the conclusions in relation to employment and economic activity as detailed in Volume 3D Chapter 2.

9.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

9.4.1 Meath County Council Elected Members (SI-2015-0002)

- 44 Meath County Council Elected Members noted that the need for the interconnector should be balanced against the Economic Development Strategies, Heritage and Biodiversity Plan for the County.

Applicant's Response:

- 45 The preparation of the EIS for this Strategic Infrastructure Project involved balancing all the various environmental and technical factors. The submission from the Executive of Meath County Council (SI-2015-0216) provides an evaluation of the project in relation to Economic Development Strategies, Heritage and Biodiversity Plan for the County.

9.4.2 Monaghan Anti Pylon Committee (SI-2015-0278)

- 46 Monaghan Anti Pylon Committee (MAPC) make the following submissions:
- There are 40 rather than 39 dwellings within 100 metres of the centre line, within 200 metres there are 140 dwellings and within 20 metres there are numerous farmyards where people spend a lot of their working day.
 - The proposed development will sterilise lands in the vicinity of the proposed development and this will lead to the impacts on the future population demographics of the CMSA.
 - The impacts from the proposed development will affect a wider population than those located in close proximity to the proposed development as road users could cross under the three or four times a day.

Applicant's Response:

- The stated figure of 39 dwellings is based on scaled measured distances by the Project Team. The existence of the additional dwelling referred to is not disputed but it lies just outside the 100 metre corridor as measured. As the proposed development passes primarily through agricultural lands it does pass through areas where farmers spend parts of their working day.
- As detailed in Volume 3C Chapter 3 Land Use the proposed development outside the footprint of the towers will not sterilise lands. The future development of sites will have to be planned in the context of the proposed Nationally important Strategic Infrastructure Development. In overall terms the proposed development will not have significant effects on population demographics of the CMSA.
- The EIS identified that properties within approximately 500 metres of the route are most likely to experience higher visual impacts and that visual impact decreases with distance. Volume 3C Appendix 11.2 RVIA provides an assessment of all dwellings within 500 metres either side of the proposed development. It concludes that there are 472 no. properties within this zone which will be affected visually to varying degrees, ranging from negligible to major adverse, by the proposed development. Road users crossing under the lines will also experience views of the proposed development.

10 HUMAN BEINGS – LAND USE

10.1 OVERVIEW

- 1 Land Use was raised as an issue in approximately 722 no. of submissions/observations. These submissions are listed in Table 25 of **Appendix 1.2** of this report.
- 2 Land use is a large topic area; however, it was possible to identify a number of recurring issues. The number and breakdown of submissions / observations in which particular issues regarding land use were raised is listed in Table 26 of **Appendix 1.2** of this report.

10.1.1 North East Pylon Pressure (NEPP) (SI-2015-0332)

- 3 North East Pylon Pressure (NEPP) in relation to this topic makes the following submissions:
 - There is an incomplete analysis of the overall effects of grid development on local populations and the wider public.
 - The number of houses within 800 metres increases dramatically.
 - The list of extant permissions is incomplete.
 - Households have not been able to know if landholdings can be utilised for buildings of family residences or business premises.

Applicant's Response:

- Volume 3D, Chapter 2 provides an evaluation of the impacts on population and economics. Sections 2.8 and Section 4.8 identify the interrelationships between the topic of Human Beings – Population and Economic and other chapters within the EIS where the potential for other impacts on human beings could arise. The EIS makes it clear that impacts on population are inherently interrelated to the environmental topics that are evaluated in the EIS and that measures are included in other chapters of the EIS to mitigate potential adverse impacts on human beings, arising from these other topics.
- The EIS identified that properties within approximately 500 metres of the route are most likely to experience higher visual impacts and that visual impact decreases with distance. Volume 3D Appendix 11.2 RVIA provides an assessment of all dwellings within 500 metres either side of the proposed development. It concludes that there are 598 no. properties within this zone which will be affected visually to varying degrees, ranging from negligible to major adverse, by the proposed development.
- The list of extant permissions was correct at the time of publication of the EIS. Planning searches are continuing to monitor planning applications in the area.
- Planning applications have been made in the vicinity of the proposed development over the past number of years.
- EirGrid are unaware of any applications that have been refused as a result of the proposed development.

10.2 RESPONSE TO GENERAL ISSUES RAISED

- 4 The topic of Land Use is evaluated in Chapter 3 Human Beings Land Use, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to the issues raised by the observers.

10.2.1 Potential Impact on Land Use

- 5 The main issue raised in submissions in relation to Land Use is the potential impact on farming, forestry, horticulture and the equine sector during the construction and operational phases of the proposed development. Specific concerns include: the amount of land required for the proposed development; potential restrictions on land utilisation at the base of the towers and along access routes; subdivision of land due to the presence of towers; duration of the construction phase of the development; destruction of hedges; damage to land that has been reseeded; damage to drains and wells; construction traffic to the proposed construction sites causing damage to land; disease control and cross contamination issues; impact on equine industry; eligibility for EU Farm Support Schemes; difficulties in conducting day-to-day farming activities during the construction period; and difficulties in conducting day-to-day farming activities (such as cutting silage and using modern farming machinery) during the operational phase. Other concerns include potential to impact on agricultural production and quality of agricultural produce due to the presence of the OHL.

Applicant's Response:

- 6 The potential impact on Land Use has been comprehensively evaluated in Chapter 3 of Volume 3C & 3D. This includes the consideration of potential impacts on individual land holdings (presented in Appendices 3.1, Volume 3C & 3D). The potential impact on Land Use is also summarised in Volume 3A, the Non-Technical Summary (Section 5.3).
- 7 Section 3.2.1, Chapter 3, Volume 3C & 3D sets out the scope of evaluation in relation to agriculture, forestry and horticulture which includes an appraisal of the likely Land Use impact, including potential restrictions on existing uses. Table 3.1 Chapter 3 of Volume 3C & 3D the EIS outlines the criteria for the categorisation of the sensitivity of a land parcel. The sensitivity values range from very low to very high depending on the enterprise type and its sensitivity to change. Table 3.2 Chapter 3 of Volume 3C & 3D the EIS outlines the criteria and methodology for evaluation of the impact of magnitude on the agronomy environment. The magnitude of the impact is the scale of impact due to the proposed development and the potential values in Table 3.2 range from very low to very high. The probability and duration of occurrence is also considered. Section 3.5.2 outlines the potential impacts during the construction phase. Section 3.6.1 outlines mitigation measures to avoid or minimise potential impacts during the construction phase. Section 3.6.2 outlines mitigation measures to avoid or minimise potential impacts during the operational phase. Section 3.7.3 outlines the residual impacts on individual land parcels in the operational phase including land use restrictions at tower sites.
- 8 Section 3.9 of Volumes 3C & 3D concludes that, along the proposed Strategic Infrastructure Development there will be imperceptible or slight adverse impacts in 94.5% of land parcels, moderate adverse impacts on approximately 5% of land parcels and major adverse impacts on approximately 0.5% of land parcels.

- 9 In County Monaghan the proposed development will result in 2.2 hectares of land being permanently restricted at the base of the proposed towers, 30.5 hectares of land with short to medium term damage caused by construction activity and 1.4 hectares of land with long term damage at the site of the construction materials storage yard. In the context of the total agricultural area of County Monaghan being approximately 106,300 hectares, the potential negative economic impacts are negligible on the county as a whole. Submissions refer to an increased impact on the farms of County Monaghan where the farm and field size is smaller than the national average. Appendix 3.1 of Volume 3C of the EIS shows that there are 181 land parcels located in County Monaghan and 94% of these have imperceptible – slight adverse impacts and 6% have moderate adverse impacts. This is similar to 94.5% imperceptible – slight adverse impacts and 5% moderate adverse impacts along the entire proposed development. Section 3.7 of Volume 3C of the EIS states that the area restricted at the base of the towers and the area of land damage is 0.1% and 1.7% respectively of the area of affected land parcels in County Monaghan. Therefore the predicted impact on farms in County Monaghan is similar to the predicted impact on farms along the entire proposed development.
- 10 In County Meath the proposed development will result in 4.2 hectares of land being permanently restricted at the base of the proposed towers, 56.5 hectares of land with short to medium term damage caused due to construction activity and 14.6 hectares of forestry cleared in the vicinity of the proposed OHL. In the context of the total agricultural area and commercial forestry area of County Meath being approximately 192,000 and 9,700 hectares respectively, the potential impacts on land use are negligible on the county as a whole.
- 11 In County Cavan the proposed development will result in 0.58 hectares of land being permanently restricted at the base of the proposed towers and 8.4 hectares of land with short to medium term damage caused due to construction activity. In the context of the total agricultural area of County Cavan being approximately 139,000 hectares, the potential impacts on land use are negligible on the county as a whole.
- 12 Cumulative effects of the existing 400 kV OHL, the 220 kV Arva – Louth OHL, the 220 kV Maynooth – Louth OHL, the 110 kV Lisdrum – Louth OHL, the 110 kV Louth- Rathrussan OHL, the 110 kV Arva - Navan OHL and the cumulative impacts of Emlagh Wind Farm have been considered in the appraisal of impacts in Chapter 10, Volume 3B of the EIS..
- 13 Along the entire route there will be 7 hectares of land being permanently restricted at the base of the proposed towers, 95.5 hectares of land with short to medium term damage caused due to construction activity, 1.4 hectares of land with long term damage at the site of the construction materials storage yard and 14.6 hectares of forestry cleared in the vicinity of the proposed OHLs. In the context of the total agricultural area and commercial forestry area of the three counties being approximately 437,300 and 29,000 hectares respectively, the potential negative economic impacts are negligible on the three counties as a whole.

10.2.1.1 Potential Impact on Forestry

- 14 The potential impact on forestry is raised in a number of submissions, either directly or by reference to a 74m wide corridor along the proposed development (where commercial forestry and tree planting is restricted).

Applicant's Response:

- 15 As stated in section 3.5 of Volumes 3C & 3D of the EIS, commercial forests or woodland will not be planted under or adjacent to OHLs. An unplanted corridor 74m wide will be maintained along the proposed 400 kV OHL so that there is access for maintenance and adequate clearance. A similar exclusion zone has to be allowed for tree planting in GLAS (Green Low-Carbon Agri-Environmental Scheme). While tree planting is restricted within the 74m corridor, Section 3.2.1 of Volume 3C of the EIS states that within the CSMA 99.9% of the land within a 1km corridor centred on the proposed OHL is agricultural grassland with less than 3.5% of this area consisting of peat and rough grazing which may contain some scrub and trees / woodland. Section 3.2.1 of Volume 3D states that within the MSA 97.5% of the land within a 1km corridor centred on the proposed OHL is agricultural grassland and arable and approximately 2.5% is woodland / forestry. Therefore trees in natural or commercial forests, account for less than 2.5% of the area within a 1 kilometre corridor along the proposed development.
- 16 The EIS addresses the very high sensitivity of forestry plantations to OHL developments and in Table 3.1 of Volumes 3C & 3D forestry is assigned a very high sensitivity because forestry is cleared within a 74m wide corridor centred on the proposed OHLs. Eight land parcels along the proposed development have commercial forestry plantations. Section 3.7.1 paragraph 67 of Volume 3D of the EIS summarises the direct impacts on forestry. The proposed development will result in 14.6 hectares of forestry being cleared within the 74m wide corridor. In the context of the total forestry area of County Meath, County Cavan and County Monaghan being approximately 9,700 hectares, 15,700 hectares and 6,410 hectares respectively, the impact on forestry along the proposed development will be imperceptible. Major adverse impacts arise in two forestry land parcels and moderate adverse impacts arise in four forestry land parcels. The land that is cleared may be used for agriculture (e.g. grassland). There is an agreed protocol between ESB and IFA to compensate farmers in respect of the loss of tree planting rights.

10.2.1.2 Potential Impact on the Equine Industry

- 17 A number of submissions raise issues regarding potential impacts on the equine industry, particularly race horse training, arising from OHLs. One submission claims it would be dangerous for hunt horses to hunt/run along the alignment of the proposed development.

Applicant's Response:

- 18 As part of the Grid25 Initiatives, EirGrid gave a commitment to comprehensively address issues of concern to the equine sector in relation to the routing of power lines. In May 2015, EirGrid published, a report entitled *Responding to Equine Concerns*. It addresses matters such as noise, equine health and welfare and health and safety. Refer to **Appendix 10.1**. These are considered below:
- 19 **Equine Health and Welfare:** Sections 8.5.10 and 8.5.11 of Volume 3B of the EIS address potential impacts arising from EMF/ELF. *Responding to Equine Concerns* includes at Appendix 2 a review of the possible impacts on animal health from electric and magnetic fields. Refer to **Appendix 10.1**. The report concludes "*No scientific studies of potential EMF effects on horses were identified in the literature review*". This matter is considered further in **Section 7.2.2** and **Section 7.4.3** of this Response Report.
- 20 **Noise:** A number of submissions raise issues relating to the impact of noise on horses, citing potential injury and sleep disturbance. EirGrid's report *Responding to Equine*

Concern also addresses the potential impact of noise on horses. In Appendix 3, entitled *Equine Psychology and Behaviour* (refer to **Appendix 10.1**), it sets out that “horses will adapt and familiarise themselves to repeated aural and visual stimuli. Thus horses that graze in paddocks adjacent to any physical infrastructure, such as roads, airports, airfields, helicopter pads, telephone poles, electricity pylons, cell phone masts etc. become rapidly acclimatised to their presence and the noise and visual effects of these physical infrastructures rarely if ever result in injury to these acclimatised horses”. It is also worth noting that horses regularly exercise on existing public roads where they come in contact with road traffic and other background noises (including construction noise, dogs barking and other livestock).

- 21 Section 15.2.2.5 of this Response Report provides additional response material in relation to operational noise from the proposed development including the protocols in place to minimise the impact of the annual low flying helicopter inspections on high sensitivity farms (such as stud farms).
- 22 From a land use perspective, a number of submissions raise specific concerns regarding impacts on the equestrian industry in County Meath. Section 3.4.1 of Volumes 3C & 3D states that there are 12 no. equine enterprises along the proposed development. Table 8D of the 2010 Agricultural Census indicates that approximately 13%, 10% and 7% of farms in County Meath, County Cavan and County Monaghan respectively, keep horses and ponies. However the number of horses per farm overall is relatively low, 1, 0.5 and 0.4 per farm for the three counties respectively (compared with approximately 65, 42 and 44 head of cattle per farm respectively). The criteria for categorising the sensitivity of farms is set out in Table 3.1 of Chapter 3 of Volume 3D. The potential importance of equine farms is addressed in the EIS. Stud farms which are large scale and considered important on a national or regional basis (e.g. racehorse training and breeding farms) are assigned a very high sensitivity status. Other significant equine enterprises are assigned a high sensitivity status and where a few horses are kept on a farm where the main enterprise is cattle, sheep or tillage the sensitivity of the main enterprise is the determining factor. The EIS assigns a higher sensitivity to the equine enterprise because of the potential value of Thoroughbred horses and because of the intensive management practices that prevail on certain equine farms (for example training facilities and horse gallops) which are sensitive to construction activities of major linear infrastructural projects. Section 3.4.3 of Volumes 3C & 3D states that, along the proposed development, there is one very high sensitive equine and forestry enterprise and four high sensitive equine enterprises in County Meath and one very high sensitive and four high sensitive equine enterprises in County Cavan and County Monaghan. The impacts on these land parcels as set out in Appendix 3.1 to Volumes 3C & 3D range from imperceptible to slight adverse in all cases except one moderate adverse impact in County Meath where the proposed OHL cross the land parcel in a manner that could potentially restrict farm yard development. Therefore the impacts are low on equine enterprises along the proposed development.

10.2.2 Potential Impact on Farming during Construction

- 23 Recurring issues in relation to the potential impacts on farming during construction, included the potential for impacts along access routes and at construction sites, the use of privately owned access lanes, the potential risk of spreading farm diseases, the impact of driving heavy construction machinery on wet land and access to lands and to the potential sub division of land parcels due to the proposed development. Other re occurring general

concerns were in relation to the potential destruction and damage to land and how were land owners to manage their enterprises during a 36 month construction period.

Applicant's Response:

- 24 The main source of disturbance to the farming operation will occur while there is construction activity and traffic on the farm. Section 7.3.4 of Volume 3B the EIS describes the 5 stages of the construction process as follows:
- Stage 1 – Preparatory Site Work (1 – 7 days);
 - Stage 2 – Tower Foundations; standard installation (3 – 6 days), piling installation (5 – 10 days);
 - Stage 3 – Tower Assembly and Erection and Preliminary Reinstatement (3 – 4 days);
 - Stage 4 – Conductor / Insulator Installation (7 days); and
 - Stage 5 – Final Reinstatement of Land (1 – 5 days).
- 25 The construction, stringing and reinstatement activities will not last for 36 months as stated in several submissions, rather those activities will occur at any one tower location over approximately 6 – 8 weeks spread over three years. Thus, following completion of the tower construction (stages 1 to 3, six weeks) construction traffic and construction activity will cease until stage 4 or 5 commences (which will last 1 to 2 weeks). The evaluation of impact in Appendix 3.1 to Volumes 3C & 3D acknowledges that there may be considerable temporary disturbance during this 6 – 8 week period, however, with the effective implementation of mitigation the impacts will be imperceptible in the majority of situations. Between stages 3 and 4 the disturbance due to the construction areas being fenced off will be negligible and will not have a significant impact on the operation of the farm.
- 26 Landowners will not be prevented from crossing access routes during the construction period as suggested in several submissions, and therefore farms will not be sub-divided. As per the ESB/IFA Code of Practice the contractor will provide a means of crossing any fenced off access routes to accommodate the reasonable requirements of the landowner for the passage of persons, machinery and livestock. Several submissions wondered how in practice this access would be provided for milking cows that use the same access route as the construction traffic. To avoid the construction machinery coming in conflict with dairy cows, the contractor will liaise with the farmer and will agree access times for construction traffic and agree the time of the main construction activities to avoid milking times and when the cows are grazing the field where the tower is being constructed. Where the same access route is being used by cows and construction traffic, with the agreement of the land owner, the access route would be temporarily shut off for a short period to allow construction machinery to access the construction site, and then the access for livestock would be restored. A similar organisation of cattle and machinery would apply to common activities on farms such as silage making, slurry spreading, fertiliser spreading, all of which are activities commonly carried out by external contractors. Therefore the access can be maintained with a disturbance impact on farms that will range from imperceptible to slight adverse – as set out in Appendix 3.1 to Volumes 3C & 3D.
- 27 Several submissions claim that farmers will not be able to harvest their silage because the farmer will not have access to the silage ground for up to 36 months. It is accepted that the land at the construction site will not be available for silage and it may not be possible to cut grass on an access route if temporary soil damage occurs. According to Appendix 3.1 to Volumes 3C and 3D the area which would not be available in those circumstances

- (construction sites and access routes) will typically be 1 – 5% of the farm. The remainder of the silage on the land can be cut. There will be continuous access to silage fields for fertilising, slurry spreading and harvesting and liaison between contractor and land owner will facilitate the safe movement of silage harvesting machinery across access routes.
- 28 Some submissions claim that water sources on the farm may be affected during construction. Mitigation measures are specified in Section 8.6 of Volumes 3C & 3D of the EIS to minimise potential impacts on water sources. In the highly unlikely event that water sources are affected, then an alternative temporary water source shall be provided immediately and for the duration of the period until the usual water source is restored.
- 29 During the construction phase approximately 95 hectares of land (0.02% of the area of agricultural land in Counties Meath, Cavan and Monaghan) will be required for the construction sites and access routes. In Section 3.6.1 of Volumes 3C & 3D, a commitment is given in the mitigation measures that stripped back top soil at construction sites will be replaced, that all disturbed field surfaces will be reinstated and affected land drains will be redirected in a manner that maintains existing land drainage. Remedial works will be carried out as agreed with the land owner and, if it is required that additional remedial works have to be carried out by the land owner, the costs of such works will be paid to the landowner as per the ESB / IFA Code of Practice. On individual land holdings the areas affected are small (as discussed in Appendix 3.1 to Volumes 3C & 3D) and the impacts due to land damage are imperceptible to slight adverse.
- 30 As stated in Section 7.3.4.1.2 of Volume 3B, during construction vegetation at construction sites and along access routes will be cut back to allow access and provide clearance for the OHL. In Appendix 3.1 to Volumes 3C & 3D this impact is assessed for affected land parcels. The impact on the shelter available to livestock is imperceptible due to the small lengths of hedgerow affected. If boundaries are removed at tower construction sites, the reinstatement works will be agreed with the landowner and a new stock-proof boundary will be reinstated.
- 31 Many submissions raise issues as to the magnitude of potential construction impacts and indicate that these impacts will affect the viability of the farm. Appendix 3.1 to Volumes 3C & 3D describe the potential construction impacts, before mitigation, as moderate adverse in the majority of land parcels. This takes into account that although the magnitude of a potential impact may be high (for example a disease outbreak), these potential impacts are not permanent and the probability of occurrence is very low. These impacts, when assessed over the operational phase of 60 – 80 years, will not significantly change the Land Use on affected land parcels. The potential disturbance caused to livestock and the inconvenience caused to a land owner over a 2 month period is not permanent or residual in the majority of situations when the mitigation measures recommended in the EIS are effectively implemented. Many submissions/observations received by the Board fail to acknowledge the mitigation measures in Section 3.6 of Volumes 3C & 3D of the EIS and the observers state that the potential impact is the predicted or residual outcome (e.g. submission 0278 from County Monaghan Anti Pylon Committee). Of course, this contention is incorrect as the suite of mitigation measures set out in the EIS must be taken into account. When the mitigation measures are effectively implemented the residual or post mitigation outcomes will be imperceptible and slight adverse in the majority of land parcels. Mitigation measures are set out in Section 3.6 of Volumes 3C & 3D of the EIS.

10.2.2.1 Potential Impact of Access Routes

- 32 A significant number of submissions raise various concerns regarding the proposed access routes.

Applicant's Response:

Potential for Sub-Division of Farms

- 33 Some submissions refer to potential subdivision of farms due to the access routes. During construction access routes to construction sites may be located across fields but will not sub divide farm holdings. These access routes are temporary (during the construction period only) and, as specified in Section 3.6.1 1 of Volume 3C & 3D of the EIS, continuous safe access, for farmers and their livestock, will be maintained, therefore farms will not be subdivided as stated in some submissions.

Use of Private Laneways

- 34 Other submissions express concerns that private laneways are proposed to be used by the construction traffic. The use of private laneways will generally minimise the requirement to use additional access routes across green fields and therefore minimise the amount of land required and the area of land damaged. This is in line with current practice for most existing farm machinery. The type of construction machinery as discussed in Section 3.5.2.1 of Volume 3C & 3D the EIS is similar to machinery that would be required for small construction projects on farms (for example slatted sheds). The contractor will consult with the landowners to ensure that the continued use of these laneways by the landowner is facilitated. Section 3.6.1 of Volumes 3C & 3D states that any losses which are attributable to the proposed development will be addressed by compensation as per ESB / IFA agreement.
- 35 This objection relates to the implementation of any planning approval which may be granted. Therefore, it is not relevant to the determination of the present application. The objection addresses a purely hypothetical scenario which does not properly arise in the course of considering the application. However, without prejudice to that consideration, ESB and EirGrid have adequate statutory powers to enable them to gain access to lands for the purposes of carrying out development [insert some of these powers here].

Reasonable Access

- 36 An access officer will be appointed to discuss the construction process and timing with land owners and the detailed construction management in order to facilitate the land owner, machinery and livestock. As set out in Section 3.6 of Volumes 3C & 3D construction personnel will be trained in relation to livestock safety and bio security on farms.
- 37 Land owners will be given notice of commencement of works in advance. Farm boundaries will be maintained stock proof, construction sites will be fenced off and access routes will be fenced off where required, but the land owner and livestock will have reasonable access to all parts of the farm during construction. What is meant by reasonable access is that if cattle require continuous access across a construction route, to access a water source or to access the milking parlour for example, this must be provided by the contractor. However this access could be closed temporarily during the 30 day period at each tower construction site, while construction traffic is using the access route – for the safety of

livestock and construction personnel. Overall this type of disturbance is manageable and is considered imperceptible.

Proposed Access is not suitable for Heavy Machinery

- 38 A number of submissions also raise issues that their land was too wet to travel across with heavy construction machinery. Section 7.3.3 (paragraph No 20) of Volume 3B states that in wet areas bog-mats, or aluminium tracking may be required in order to access sites without causing excessive damage. The types of access tracks which may be used are described in Section 7.3.4.1.3 of Volume 3B. The mitigation measures specified in Section 3.6 of Volume 3C and 3D of the EIS state that all disturbed field surfaces will be reinstated and any damage to land that cannot be mitigated directly by the contractor will be addressed with compensation payable to the land owner. For example the land at construction sites and along temporary access routes may require subsoiling, ploughing and reseeding a few years after the construction period, if crop reestablishment is not satisfactory. Such potential damage will be restricted to relatively small areas of land and can be readily mitigated by employing appropriate remedial works in suitable conditions.

10.2.2.2 Potential Impact due to spread of Farm Diseases

- 39 A number of submissions express concerns about potential impacts due to construction traffic spreading farm diseases.

Applicant's Response:

- 40 Section 3.5.2.2 of Volumes 3C & 3D and Appendix 3.1 to Volumes 3C & 3D addresses the increased risk of spreading farm diseases during construction, particularly where the access to individual towers on one land holding may involve using existing or temporary access routes through another person's land holding – or where access routes pass through farm yards. To mitigate this, the contractor will adhere to disease avoidance protocols. The contractor will notify the Department of Agriculture, Food and the Marine Epidemiology Unit and the Local District Veterinary Officer of the location of proposed works. Where there are notifiable diseases present (TB for example) the contractor will be required to adhere to disease prevention protocols specified by the Department of Agriculture, Food and the Marine. In conclusion, in circumstances of effective implementation of the mitigation measures set out in the application documentation, the possibility of farm diseases spreading as a result of the construction phase of the proposed development is very low.

10.2.3 Potential Impact on Farming during Operation

- 41 A recurring issue raised in a significant number of submissions is the potential for impacts on farming activities once the OHL is constructed and operational. Specific issues raised include, adverse impact on farming in general; inability to farm when the proposed overhead lines are present; the towers will make the fields unworkable; an unacceptable amount of land will be required for the proposed development and impact on farming in County Monaghan due to small farm size.

Applicant's Response:

- 42 Appendix 3.1 to both Volumes 3C & 3D identify that the towers will be an obstacle to machinery operations, and although there will be continuous access under the proposed OHL and land parcels will not be sub divided, the proposed OHLs will pose an additional

operational risk. Other potential impacts as discussed in Section 3.5 of Volumes 3C & 3D are considered in the individual land parcel impact appraisal, for example other permanent disturbance issues such as potential impacts due to weed infestations and potential impacts on EU Farm Support Payments. Potential impacts on farm yard development are also considered. The locations of the towers in relation to field boundaries and ditches have been assessed in Appendix 3.1 to Volumes 3C & 3D and the impacts on land parcels due to the towers being obstacles to farm machinery. The area restricted at the base of each tower is 0.02 hectares on average as assessed in Appendix 3.1 to Volumes 3C & 3D. While the land use impact appraisal assumes that the area at the base of the tower is not used, in many cases (perhaps the majority of cases) this area will be grazed by livestock and in such situations it can be deemed eligible for area based payments. The potential impact on farm yard development is addressed in Appendix 3.1 to Volumes 3C and 3D for each land parcel in terms of the proximity of the proposed OHL and how the proposed OHL may potentially impact on farmyard expansion. Having considered the potential impacts and mitigation measures as set out in Section 3.6 of Volumes 3C & 3D, along the entire route, there will be in 94.5% imperceptible or slight adverse effects, 5% moderate adverse effects and 0.5% major adverse impacts on individual land holdings. As discussed in section 3.2.5 of Volume 3C and 3D a slight adverse impact is an impact which results in a noticeable but minor change in the farm enterprise and the enterprise and land use would remain unchanged. A moderate adverse impact requires moderate changes in management and operation of a farm, but the enterprise and land use would remain unchanged. A major adverse impact would result in major change in the farm enterprise. As stated in section 3.6.1 of Volumes 3C & 3D, there is an agreed protocol between ESB and IFA to compensate farmers for any financial losses resulting from the proposed development.

43 Submissions 0609, 0610 and 0829 from Oristown, Kilmessan and Kilbeg IFA refer to the restriction on irrigating crops under the proposed OHLs. The appraisal of impact on individual land parcels in Appendix 3.1 to Volume 3C & 3D takes into account this restriction and this potential impact is identified in Section 3.5.3.5 of Volume 3C and 3D. However, the impact is considered imperceptible – slight adverse on tillage farms because of the following factors;

- vegetable and potato crops can be grown successfully under OHLs,
- potato crops are grown without irrigation in the majority of situations,
- rotation requirements for vegetable and potato crops mean that the crop may only be grown one year in four in a particular field, and
- the low area of such crops grown near the proposed development.

44 Potential disturbance will arise due to maintenance of the proposed OHL infrastructure as discussed in Section 3.5.3.2 of Volumes 3C & 3D. For example, the hedge height beneath and within approximately 30 metres of the proposed OHL will be managed by ESB to maintain a minimum clearance. This will not have a significant effect on shelter on affected farms, although it will give rise to periodic disturbance to the farm enterprises along the proposed development. There are agreed protocols for this type of maintenance work (i.e. the ESB / IFA Agreement) and Overhead Line Maintenance crews regularly enter farms for maintenance works without significant adverse effects on farms.

10.2.3.1 Potential Impact on Livestock Health

45 Of the submissions regarding potential impacts to farming, the majority express concerns relating to health. Many of these were general references to health without specifying whether it was a concern relating to animal health or human health – or both. These submissions were in addition to those raising the potential impact on livestock health during the construction phase due to spreading farm diseases. These health related submissions are concerned with the potential impacts on the health of their livestock due to proximity to towers and high voltage OHLs.

Applicant's Response:

46 Sections 8.5.10 and 8.5.11 of Volume 3B of the EIS and **Section 7.2.2** of this Response Report address potential impacts arising from EMF/ELF.

47 Section 3.5.2.2 of Volumes 3C & 3D identify that the proposed construction works could generate traffic, noise and dust that could potentially disturb livestock and therefore cause stress or injury and thereby impact on the welfare of livestock. This is also addressed in Section 10.2.2 of this report and the proposed mitigation measures are set out in Section 3.6 of Volumes 3C & 3D.

48 As discussed in Section 15.2.2.5 of this Response Report, the main noise source is constant and will not startle animals because it will be perceived as a background noise. The impacts due to operational noise is considered imperceptible. Low flyover helicopter inspection flights will occur on one occasion each year along the proposed development. These inspection flights are relatively common along the existing 6,500km network of high voltage OHLs. There is a proactive protocol in place where ESB Networks notify all land owners in advance of helicopter inspections via the local and national media and may in certain situations notify individual farms. Overall the impact from annual helicopter inspections is considered imperceptible – slight adverse.

49 On balance, it is considered that the presence of the overhead line will not increase the risk of injury to livestock from lightning over and above the risk that would arise had the overhead line not been there.

50 A small number of submissions refer to the risk of spreading animal diseases during the operational phase. The risk from spreading animal diseases by machinery contact is very low. Maintenance crews will adhere to the disease prevention protocols (as described in Section 3.6 of Volumes 3C & 3D and referred to in the ESB/IFA Code of Practice) and therefore the impact, if any, will be imperceptible..

Stray Currents

51 A number of submissions which raised issues about animal health referred specifically to high somatic cell counts due to stray voltage.

Applicant's Response:

52 Farmers may have concerns regarding stray voltage from overhead transmission lines, where stray voltage has been a problem on farms it has been found to be the result of problems with the farms own electrical wiring. A good standard of electrical installation will prevent a stray voltage problem. The ESB booklet '*Farm Well Farm Safely*' outlines the types of fittings and the standard of installation required for fittings on farms.

10.2.3.2 Potential Impact on the Food Chain⁶

- 53 A number of observers have raised issues that the food chain could be affected as grass from land proximal to the proposed development eaten by cattle and milk producing cows and could be tainted and this tainted milk and beef could enter the food chain.

Applicant's Response:

- 54 Refer to the Applicants response to potential EMF / ELF impacts in **Section 7.2.2** of this Response Report. There is over 400 km of existing 400 kV OHLs from County Clare to County Kildare and County Meath and there is no evidence of any impact on food production on farms along the existing 400 kV lines for the past 30 years.
- 55 There is no reference to high voltage OHL affecting the quality of beef, lamb or milk in the Beef and Lamb Quality Assurance Scheme Producer Standards and National Sustainable Assurance Scheme Producer Standards, as published on the Bord Bia Website (www.bordbia.ie). There is no reference to high voltage OHL affecting the quality of grain in the Grain Quality Assurance Scheme (<http://www.irishgrainassurance.ie/>). Neither is there a reference to OHL or any criteria relating to OHL in the published Organic Standards of the Irish Organic Farmers and Growers Association (IOFGA) or the Organic Trust Ltd. Other than commercial forestry and tree planting options in schemes such as GLAS, there is no reference to OHL being a criteria which would impact on eligibility for any EU Area Based Farm Support Schemes such as Single/Basic Payment Scheme, Area of Natural Constraints Support Scheme, GLAS, AEOS (Agricultural Environmental Options Scheme) and Organic Scheme. Therefore there is no basis to claims that agricultural produce from areas under the proposed OHL will be tainted or that its marketability will be compromised.

10.2.3.3 Potential Impact on Future Agricultural Payments

- 56 A number of submissions have raised issues that future agricultural payments to farmers will be impacted.

Applicant's Response

- 57 There will be temporary reductions in land area during construction at construction sites and along access routes for which the land owners will be compensated for. The maximum duration of this reduction is 36 months.
- 58 The area of the construction sites and access routes that will not be eligible for area based payments during the construction period are as follows
- 0.125 hectares per tower construction site for up to 36 months;
 - 0.04 hectares per guarding location for up to 12 months; and
 - 0.04 hectares per stringing sites for a few weeks; and
 - Access routes will be 3 – 4 metres wide and this land will not be eligible for area based payments for up to 36 months
- 59 Stringing sites (0.04ha) can be declared as eligible land because these sites will only be fenced off for a few weeks. Following reinstatement of the construction areas and the

⁶ Submissions 0215, 0278

access routes these areas will also be eligible for area based payments. Given that the temporary area reductions shown in Appendix 3.1 to Volumes 3C & 3D are typically 1 – 5% of land parcel area for the vast majority of affected land holdings the impact is considered imperceptible. If the utilisable agricultural area is temporarily reduced during the 36 month construction period then land owners will be compensated for any monetary losses which occur as a result of this.

- 60 During the operational phase, the land at the base of the towers will be permanently restricted and may lead to a permanent reduction⁷ in area eligible for area based payments. The average area of each tower is assumed to be 0.02ha. Land owners will receive compensation plus an annual interference payment per tower to ensure they are not at a financial loss. Impacts on Forestry and EU Environmental payments that are directly attributable to the proposed development will also be addressed in compensation.
- 61 Sections 3.5.2.2 and 3.5.3.2 of Volumes 3C & 3D of the EIS identify potential impacts on tree planting and Low Input Permanent Pasture options in GLAS. In addition to income loss, non-compliance with existing schemes has knock-on effects such as additional paper work, delayed payments and additional audits by the Department of Agriculture, Food & the Marine. However the impacts caused by the construction of the proposed OHL are out of the control of the farmer and such actions are referred to as Force Majeure in the terms and conditions of each Farm Support Scheme. As a result of the Force Majeure terms and conditions of these schemes, farmers will generally avoid penalties for non-compliance where the non-compliance is as a result of the proposed development. As stated in section 3.6.1 of Volumes 3C & 3D, there is an agreed protocol between ESB and IFA to compensate farmers for any financial losses resulting from the proposed development, and this would include any losses due to penalties or reductions to area based payments where such losses are caused by the proposed development.

10.2.3.4 Potential Health and Safety Impacts

- 62 The issue of electricity on the farm and the associated health and safety risks of operating modern farm machinery under high voltage electricity lines is raised in 187 of the submissions.

Applicant's Response:

Operating Farm Machinery near OHLs

- 63 The Land Use Impact appraisal in Section 3.5.3.5 of Volumes 3C & 3D and the individual land parcel impact appraisals in Appendix 3.1 to Volumes 3C & 3D acknowledge that the proposed development will pose an additional safety risk on affected land parcels. The towers themselves are permanent obstacles for machinery however, there is a very low risk of this happening.
- 64 From 2005 to 2014 the Health and Safety Authority of Ireland have recorded 193 deaths on Irish farms of which three deaths were due to electrocution and two of these deaths were due to contact with an OHL. The working height of most machines on farms is less than 4 metres, thus preventing contact with the proposed OHLs which are at least 9 metres above ground level. For example the typical height of a tractor is 2.8 - 3 metres and slurry tankers are less than 3.5m high. Slurry is spread by low trajectory spreading in the vast majority of

⁷ While a permanent reduction is assumed in the assessment in Appendix 3.1 of Volumes 3C & 3D, in practice many grassland farmers graze the reseeded base of the towers and therefore these areas are eligible for payments.

situations at a height of less than 3 metres. The working height of silage, hay and straw baling equipment is generally less than 3.5m. Therefore, while there is an additional safety risk due to the presence of the overhead line, for the vast majority of farm machinery this risk is negligible. Where there are high loads and high reach attachments, for example front loaders, hedge cutters, tipping trailers and telescopic loaders, there is additional risk of making contact, but the farmer can manage the risk so that it is negligible. The *'Guidelines for Safe Working Near Electricity Lines in Agriculture'* published by the Health and Safety Authority of Ireland recommends additional precautions are taken for machinery over 4 metres in height. There are a range of silage harvesting equipment with operational heights of 4m or less, for example trailed forage harvesters, forage wagons and baled silage equipment. Self-propelled silage harvesters and combine harvesters have working heights in excess of 5 - 6 metres. The operators of these specialist machines (generally agricultural contractors) have to assess and minimise the risks. Irrigation guns for water or effluent should not be operated within 30m of any OHL.

65 For construction sites on farms located beneath 400 kV lines, *'Guidelines for Safe Working Near Electricity Lines in Agriculture'* published by the Health and Safety Authority of Ireland recommends the provision of exclusion zones for construction machinery. This would apply to operations such as land drainage, construction of farm roads, laying water pipes and other excavation activities. The height of machinery that can be used under the proposed lines for these operations must be restricted to maintain adequate clearance and advice should be sought from ESB safety personnel to insure such construction works can be carried out safely.

66 In conclusion, there is an additional risk on the affected farms due to the proposed OHL. However, a similar or higher risk exists on many farms where existing OHLs have lower ground clearances. The ground clearance of over 9m minimises the risk of contact. It is considered that this impact ranges from slight adverse to imperceptible, and it will not result in a significant change in land use under the proposed lines.

Risk from Lightning

67 During thunderstorms overhead lines, such as that proposed, are occasionally struck by lightning. However in such incidences the shield (earth) wires dissipate the lightning strikes to several adjacent towers near the points of the impact thereby reducing the overall severity of the lightning strikes at the points of impact. It is also the case that the shield wires potentially protect persons and livestock in the vicinity of such overhead lines from lightning. Therefore, on balance, it is considered that the presence of the overhead line will not increase the risk of injury to persons or livestock from lightning over and above the risk that would arise had the overhead line not been there.

10.2.4 Potential Impact on the Future Development of the Farm

68 A large number of submissions raise the issue of the potential impact on the future development of their farms, the majority referring to the issue of potential devaluation. The observers are concerned that the towers and OHLs will restrict development on the farm and devalue their property.

Applicant's Response:

69 Issues relating to potential property devaluation are addressed in **Section 2.3** herein. New transmission lines are constructed subject to the landowners right to be paid compensation. Therefore, the Land Use appraisal assumes that any potential losses will be

paid to land owners as per the protocols set out in the ESB / IFA Code of Practice. The scope of the Land Use appraisal as set out in Section 3.2 of Volumes 3C & 3D addresses impacts on agricultural, horticultural and forestry land uses and does not address the development of agricultural land for uses other than for these three land uses. The issue of potential loss of development rights is addressed in detail in the ESB / IFA Code of Practice. The issue of potential farm yard development is addressed because existing farm yards and buildings are part of the existing Land Use environment. To assess the potential restriction on farm yard development, the area of land around the farmyard which is available for expansion and the potential restriction of this area by the proposed OHL development is assessed for each land parcel in Appendix 3.1 to Volumes 3C & 3D. Factors which affect how the proposed development might restrict farm yard development are the proximity of the proposed OHL to the yard, access to the yard and the presence and shape of existing field boundaries. The proposed development has been designed to avoid as far as possible farm yards and agricultural buildings. The impact on the potential for farm yard expansion is summarised in Section 3.7.3 of Volumes 3C & 3D. One land parcel has a major adverse impact and sixteen land parcels have moderate adverse impacts. The impacts on 95% of land parcels along the proposed development is imperceptible or slight adverse. Where a conflict does arise, there is an agreed protocol between ESB and IFA to compensate farmers for any justifiable financial losses.

10.2.5 Damage / Injury to Agriculture / Forestry

70 A number of submissions seek to address issues relating to the alleged potential liability of EirGrid for damages in respect of asserted anticipated injury to property or interference with business. These may be grouped together and responded to accordingly.

- EirGrid responsibility for restricted milk consumption/sick cows;
- Legal issues surrounding the removal of forestry;
- Compensation for accidents on the farm/compensation for damage to broodmares/damage to livestock as a result of EMF and during construction (re removal of hedges and tress); and
- Indemnity for injury, loss of life to anglers.

71 The likely impact of the proposed development on such matters as agriculture, fisheries and property has been fully assessed and described in the EIS submitted with the application. The issue of potential responsibility or liability for compensation arising from such matters is a civil matter and not a planning and/or environmental consideration relevant to the determination of the present application before the Board. Without prejudice to this contention, it will be noted that the *ESB/IFA Code of Practice for Survey, Construction & Maintenance of Overhead Lines in relation to the Rights of Landowners*, contains provision for the compensation and indemnification in respect of certain losses, damage or bodily injuries or illnesses caused or connected with the works or equipment. In addition, *ESB/IFA Agreement for Loss of Tree Planting Rights*, makes provision for compensation relating to forestry.

10.2.6 Further compensation and Payment Issues

72 A number of submissions raise issues of compensation to landowner and indeed non-landowners. These arguments overlap with the issue addressed above relating to the alleged potential liability of EirGrid for damages and/or injuries to agriculture. The response is the same: the EIS addresses the likely significant impact of the proposed

development such matters, *inter alia*, as on human beings and material assets. Issues of potential compensation to landowners and/or non-landowners is not a relevant consideration for An Bord Pleanála. Matters of compensation are dealt with under the appropriate statutory and indeed non-statutory compensation codes. It should also be noted that it is standard practice for landowners, who host overhead transmission towers, to receive an annual mast interference payment in accordance with the ESB/ IFA Code of Practice.

- 73 However, without prejudice to that contention, it will be noted that EirGrid has established a proximity payment scheme whereby payments are to be made to homeowners within 200m or closer to a new line or station. These are ex gratia payment and not in acknowledgment of any legal obligations. Furthermore EirGrid also makes Community Payments to support local amenities and community initiatives. The proximity and community payments are Grid25 initiatives are in accordance with the Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure” published on the 18th July 2012. This refers to building community gain considerations into their project budgeting and planning

10.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

- 74 There are no specific issues relating to land use in the submissions received from the prescribed bodies.

10.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

10.4.1 Elected Members of Monaghan County Council (SI-2015-0215)

- 75 The technical part (section 2) of the submission from Monaghan County Council does not raise issues in relation to potential impact on agriculture / land use. However, comments by elected members (section 3) do raise issues relating to agriculture / land use. The majority of issues raised have been addressed in Section 10.2.1, 10.2.2, 10.2.3 and 10.2.4 of this Response Report. The members of the local authority also state that “the food produced in County Monaghan will not have the same status as the remainder of the country due to the presence of the OHL”.

Applicant's Response:

- 76 Refer to the Applicants response to potential EMF / ELF impacts in **Section 7.2.2** of this Response Report. In this regard, the weight of scientific evidence concludes that there are no significant health effects on livestock or crops from EMF sources such as the proposed development. Indeed, by way of example, there is no difference in status of food produced in County Clare, where two existing OHLs are located.

10.4.2 Elected Members of Meath County Council (S1-2015-0002)

- 77 The land use concerns referred to in this submission were in relation to an adverse impact on the Equestrian Industry in County Meath.

Applicant's Response:

- 78 The potential impact on the equine/equestrian industry is addressed in detail in section 10.2.1.2 of this Response Report. The potential importance of equine farms is addressed in the EIS by assigning a higher sensitivity status to this enterprise. Section 3.4.1 of Volume 3D states that there are 6 no. equine enterprises in County Meath along the proposed development. There are additional farms along the proposed development in County Meath where horses are kept because Table 8D of the 2010 Agricultural Census states that approximately 13% of farms in County Meath keep horses and ponies. Section 3.4.3 of Volume 3D of the EIS states that, along the proposed development, there is one very high sensitive equine and forestry enterprise and four high sensitive equine enterprises in County Meath. The impacts on these land parcels as set out in Appendix 3.1 to Volume 3D range from imperceptible to slight adverse in all cases except one moderate adverse impact in County Meath where the proposed overhead lines cross the land parcel in a manner that could potentially restrict farm yard development. Therefore the impacts are low on equine enterprises along the proposed development.

10.4.3 Tom and Elizabeth Byrne (SI-2015-0048)

- 79 This submission relates to the impact of construction traffic on sheep and free range hens. The submission states that there is no alternative land for grazing. It is feared that there will be no land left due to the construction and harm may be caused to sheep, lambs and hens.

Applicant's Response:

- 80 The access route shall be fenced, with the agreement of the land owner, so as to prevent harm to the livestock and prevent direct contact with the sheep. If access is required by the land owner across the access route it will be provided. In the unlikely event of the free range hens crossing over the fence on to the access route, the low speed and frequency of construction traffic along the access route will not be a significant risk for the hens during the construction period. The noise, dust and movement of construction traffic along a defined access route is not considered a significant source of disturbance to sheep and other livestock. Therefore, the appraisal considers that sheep, lambs or hens will not be harmed by the construction traffic.

10.4.4 Philip and Ana Collins (SI-2015-0054)

- 81 In their submission, Philip and Ana Collins raise a number of issues regarding their poultry business. Their concerns regarding EMF and consultation are considered in **Section 7.2.2** and **Section 4** respectively in this response report. Mr & Mrs Collins other submissions relate to the impact categorisation identified for their business (which they suggest should have been categorised as very high sensitivity), and the fact that their new 32,000 laying hens unit is not shown on the EirGrid planning drawings.

Applicant's Response:

- 82 Appendix 3.1 to Volume 3C includes the land use assessment of the Collins' property (LCT-011-012-013⁸) and considers the impact to be in the low – medium magnitude range based

⁸ The impact assessment of LCT-011-012-013 in Appendix 3.1 of Volume 3C contains an errata – in column 2 it should state "The sensitivity is very high due to the intensive livestock enterprise which is located 60m South West of the proposed OHL." However this does not change the results of assessment of impact which is based on the 60m distance.

on the area of land available around the yard, which contributes to the overall slight adverse impact.

- 83 The potential for farm yard expansion is based on the actual distance from the proposed OHL and how it might potentially impact on farm yard expansion. The new poultry unit referred in this submission is visible from the roadside, was visually assessed and is considered in the land use impact appraisal in Appendix 3.1 to Volume 3C. This shed, located on the south side of the farm yard, is approximately 120m from the proposed OHL, whilst the nearest shed to the north side of the farm yard is approximately 60m from the proposed OHL.

10.4.5 Farming Organisations Cavan, Monaghan and Meath County Executives

- 84 Several submissions have been received from the farm organisations along the proposed development, for example SI-2015-0121 ICMSA and 15 local and County Branches of the IFA (SI-2015-0267, 0282, 0481, 494, 509, 540, 607, 608, 609, 0610, 0675, 0676, 0829, 0830 and 0867). These submissions/observations raise a number of common themes, the majority of which have been addressed in earlier sections. One issue not explicitly addressed is the suggestion that the proposed development will damage the "Clean & Green" reputation by erecting large pylons through some of the most productive farmland in the country and this will negatively affect the Agri-Food Sector.

Applicant's Response:

- 85 The proposed development will not adversely affect the "Clean & Green" reputation of Irish Agriculture. There are over 6,000 km of high voltage overhead lines throughout Ireland. There is over 400 km of 400 kV overhead lines in Ireland for the past 30 years passing through very productive farmland in counties, Tipperary, Offaly Kildare and Meath, for example. There is no evidence that these lines adversely affect the farming environment nor that there have been any adverse reaction in terms of the 'Clean & Green' reputation of this part of Ireland. The conclusion of the Land Use impact appraisal in Chapters 3 of Volumes 3C & 3D is that, after implementing the mitigation commitments as set out in sections 5.19 of Volume 3A and Sections 3.6 of Volumes 3C & 3D, there will be no significant change in Land Use along the proposed development. The presence of the proposed overhead line development will not affect the quality or marketing opportunities for agricultural produce as discussed in **Section 10.2.3.2** of this report.

10.4.6 Joseph Boylan (SI-2015-0184)

- 86 This submission refers to a potential impact on the organic status of the farm due to the proposed development.

Applicant's Response

- 87 The potential impact on quality of agricultural produce is addressed in detail in **Section 10.2.3.2** of this Response Report. There are no references to overhead lines or EMF in the IOFGA Standards for Organic Farmers and neither is there reference to overhead lines or EMF in the eligibility criteria for the Organic Scheme (operated by the Department of Agriculture, Food and the Marine).

10.4.7 Gerard and Glynis McAdam (SI-2015-0193)

88 This submission expresses concerns relating to;

1. The potential effects of the proposed development and state the EIS falsely states the residual impact on their property is imperceptible and only mentions impact on agricultural buildings rather than impact on their dwelling.
2. State that their property will be seriously devalued.
3. The EIS falsely states no significant impact on farm buildings which are 150m west of the proposed OHL while the cattle crush is only 50m from the proposed overhead line.
4. There will be an impact on using slurry spreading equipment and excavators.
5. Land owner will not be able to plant Miscanthus under the proposed overhead lines.
6. Will not be able to construct a sheep house close to the proposed overhead lines.

Applicant's Response:

1. The Land Use impact appraisal refers only to the agricultural use of the land parcel which is grassland. There is a small agricultural shed approximately 150m west of the proposed overhead line. The cattle crush is located approximately 30 - 35m east of the proposed overhead lines. There will be no towers located on the land parcel and hedges and trees may be cut back during the construction and the operational phases. The alignment of the proposed overhead line is at the eastern edge of the land parcel and will be an additional safety risk on the land parcel. In Appendix 3.1 to Volume 3C it is considered that there will be an imperceptible impact on the land parcel LCT-170 because the existing grassland utilisation can continue without significant impact.
2. The Land Use appraisal assumes that landowners will not be at a financial loss and if devaluation of property occurs then it will be addressed by compensation. Section 3.6 of Volumes 3C & 3D states that any losses incurred by the landowner which are directly attributable to the proposed development will be paid to the landowner.
3. The cattle crush is located approximately 30 - 35m east of the proposed overhead lines. There will be no significant impact on the utilisation of the cattle crush, which will be used on only a few occasions each year.
4. The Health and Safety issue is addressed in detail in **Section 10.2.3.4** of this Response Report.. Most farm machinery can be operated safely under the proposed lines including low trajectory slurry spreading. Additional safety precautions have to be taken if operating high reach machinery such as hedge cutters, loaders and self-propelled forage harvesters and combine harvesters.
5. Miscanthus can be sown and harvested using conventional agricultural machinery and grows to a potential height of 3.5m. There is no restriction on the sowing and harvesting of Miscanthus under the proposed overhead lines.
6. The issue of building developments and potential impacts on farm yard expansion is addressed in **Section 10.2.4** of this report. The assessment in Appendix 3.1 to Volume 3C is that there is adequate space on the land parcel LCT-170 to build agricultural buildings without having to build in close proximity to the proposed overhead lines.

10.4.8 County Monaghan Anti-Pylon Committee (SI-2015-0278)

89 This submission raises an issue as to the adequacy of the Land Use appraisal and suggests that no attempt is made to categorise land with regard to seasonal use of land and that access routes are unworkable.

Applicant's Response:

90 The potential impacts on farming are addressed in detail in **Sections 10.2.1, 10.2.2 and 10.2.3** of this Response Report and in Chapter 3 of Volumes 3C & 3D. The land use appraisal categorises the sensitivity of the land based on the farm enterprise which is the standard methodology for this type of appraisal.

91 Section 7.3.3 (paragraph No 20) of Volume 3B states that in wet areas bog-mats, or aluminium tracking may be required in order to access sites without causing excessive damage. The types of access tracks which may be used are described in section 7.3.4.1.3 of Volume 3B of the EIS. The mitigation measures specified in 3.6 of Volume 3C and 3D of the EIS state that all disturbed field surfaces will be reinstated and any damage to land that cannot be mitigated directly by the contractor will be addressed with compensation payable to the land owner. For example the land at construction sites and along temporary access routes may require subsoiling, ploughing and reseeding a few years after the construction period, if crop reestablishment is not satisfactory. Such potential damage will be restricted to relatively small areas of land and can be readily mitigated by employing appropriate remedial works in suitable conditions.

10.4.9 Michael Vaughan and Family (SI-2015-0542) and Response by the Applicant

92 This submission raises issues in relation to access for milk during construction, potential impact on somatic cell count and devaluation of property all of which are addressed in **Sections 10.2.2 and 10.2.4** of this Response Report. This submission also raises specific concerns relating to the operation of a sprinkler/rain gun system for spreading soiled, potential impact on farm road network for dairy cows and potential impact on future development of an underpass for dairy cows.

Applicant's response:

1. The application of soiled water with a sprinkler system or rain gun is restricted within 30m of the proposed overhead line on the grounds of Health and Safety, as stated in Section 3.5 of Volume 3D and 10.2.3.4 of this report.
2. The impact appraisal in Appendix 3.1 to Volume 3D for LMC-124 takes into account that there will be construction traffic on these farm roads, that the construction site will block one of these farm roads during the construction phase and that Tower 280 will be located at the edge of one of the farm roads during the operational phase.
3. The tower will be more than 80m from the N52 which is an adequate distance to allow for the construction of an underpass across the N52.

10.4.10 Kilmessan IFA (SI-2015-0610)

93 This submission outlines a particular issue regarding to interference with GPS equipment on farm machinery.

Applicant's Response:

- 94 Low levels of interference may occur with GPS equipment operating close to overhead powerlines. The use of this type of GPS equipment is however relatively uncommon and where interference is an issue the machinery can be operated without the GPS equipment . It should be note in this respect that GPS controlled machinery is never unmanned and manual override must be provided. Therefore the significance of impact is imperceptible from a Land Use perspective.

11 HUMAN BEINGS TOURISM AND AMENITY

11.1 OVERVIEW

- 1 Tourism and Amenity was raised as an issue in approximately 317 no. of submissions / observations. These submissions are listed in Table 27 of **Appendix 1.2** of this report.
- 2 The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 28 of **Appendix 1.2** of this report.

11.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Tourism and Amenity is evaluated in Chapter 4 Human Beings Tourism and Amenity, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.
- 4 This topic is closely related to Chapter 2 Human Beings Population and Economic, as local amenities are used by the population of the area where these are located and not just by tourists – i.e. visitors from outside an area who travel into the area to experience a particular feature or amenity. There is therefore some overlap and cross referencing between the responses given in this section and Section 9.2 Human Beings – Population and Economic.
- 5 Where responses are given to particular submissions and a subsequent submission raises similar issues, a reference is made back to the previous response rather than repeating the response.
- 6 One of the key issues raised in respect of tourism relates to the fact that Irish tourism is inextricably linked to the quality of the environment, and in particular, the perceived natural unspoilt environment. Arising from this, it is concluded that the sustainability of Ireland's tourism industry is linked to the maintenance of the character and scenic qualities of the Irish landscape.
- 7 EirGrid fully accepts this conclusion. The importance of the environmental interrelationship between tourism and the Irish landscape (and cultural) heritage is consistently reflected in annual surveys of overseas holidaymakers to Ireland, as illustrated in the **Table 11.1**.

Table 11.1: Annual Surveys Of Overseas Holidaymakers To Ireland

Destination Issue	2010	2011	2012	2013	2014
	Importance of Destination Issues among Overseas Holidaymakers surveyed (%)				
Beautiful Scenery	91	85	91	88	90
Good Range of Natural Attractions	82	85	94	86	87
Interesting History & Culture	80	83	91	82	87
Natural Unspoilt Environment	84	81	91	85	85

(Sources: Fáilte Ireland – Tourism Facts Annual Reports 2010-2014)

- 8 We would note that the visitor input that underpinned the findings of these reports occurred in the context of the existing grid infrastructure, including existing 400 kV OHLs (and other infrastructure such as wind turbines, roads, residential and other developments) that exists across the Irish landscape. With particular regard to grid infrastructure, there is currently approximately 6,500 km of overhead transmission lines crossing every county in the State. In particular, there is over 400 km of existing 400 kV overhead lines extending from County Clare to County Kildare and County Meath, which have been in existence for some thirty years. In addition, the more extensive 220 kV overhead line network – of approximately 1,900 km – also comprise lattice steel structures, and extends across many traditional tourist counties such as Galway, Limerick, Clare, Cork, Kerry, Waterford, Wexford, Wicklow, Dublin, Meath and Louth. The 220 kV network has also been in existence since the 1960's. There is little evidence that many of the impacts raised in the submissions related to this topic are actually occurring.
- 9 Also in this context, EirGrid's recent review of its approach to Tourism (*Your Grid, Your Views, Your Tomorrow. Responding to Tourism Concerns*, available at <http://www.eirgrid.com/media/EirGridTourismReview.pdf>) includes an International Review of Tourism Issues in Infrastructure Project Development. This document reviews literature in terms of potential impacts of grid and other infrastructure on tourism in other countries. This concludes that *"These studies show evidence of concerns about perceived harm to the natural landscape caused by transmission lines. However, there is very little evidence to show causal effect – that these damaged perceptions actually had a negative impact on tourism"*.

11.2.1 Potential Impact on Tourism and Amenity Resources

- 10 Many submissions refer to the potential for impacts on the resources which underpin tourism and amenity. Section 9.2.1 previously identifies submissions where the potential for impacts on the tourism and amenity resources are raised.
- 11 Volumes 3C & 3D section 4.2.3 describe the methodology used to evaluate the potential for impacts. The Fáilte Ireland *Guidelines on Treatment of Tourism in an EIS* state the resources that sustain tourism should be described under the headings of context character, significance and sensitivity. Section 4.4 provides a description of the key

tourism attractions and amenities in the area and makes it clear that the resources which underpin tourism along the route of the proposed development are many and varied from location to location. In the CMSA, the key resources that sustain tourism relate to the natural environment such as lakes, unspoilt landscapes and heritage – these sustain activities and attractions associated with outdoor activities. In the MSA, the key resources that sustain tourism relate to a large extent to the built heritage and associated attractions; this is acknowledged in the Meath Tourism Strategic Plan. Additional resources which sustain rural tourism relate to the natural environment such as rivers and landscapes. Tourism is also influenced by the driving routes which link tourist destinations in an area, and which link those destinations to tourist accommodation centres.

- 12 The evaluation of impacts has been made in the context of the resources that underpin tourism. Specific impacts are described Volumes 3C & 3D Chapter 4 and discussed in responding to submissions as detailed below.

11.2.2 Potential impact on Tourism and Amenity Facilities

- 13 Submissions do not generally suggest that there will be impacts on tourist and amenity facilities, but that changes which occur to the environment where such facilities are located will adversely affect the operation of the facility, manifesting in terms of lower visitor numbers. For example, it is suggested that the visual impact of the proposed development will cause a reduction in angling tourists or visitors to Bective Abbey.
- 14 Impacts on specific facilities are described in the EIS Volumes 3C & 3D which concludes that the proposed development will not directly inhibit any tourist and amenity activities along its route, but that the reduction in visual amenity of an area may be perceived as reducing the attractiveness of an area for tourist and related activities. This reflects a key issue for tourism, whereby perception of impact is as important as the reality of impact.

11.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

11.3.1 Fáilte Ireland (SI-2015-0213)

- 15 Fáilte Ireland is the National Tourist Development Authority and has made a submission which may be summarised as follows:
- The Irish landscape is one of the primary reasons for International tourists visiting the country it is essential that the quality, character and distinctiveness is protected.
 - The proposed development is located in the northern part of Irelands Ancient East which is one of the three overarching brand propositions for Ireland and it is a platform upon which Ireland can present a portfolio of world class visitor experiences.
 - It is considered that character of the landscape and the various aspects of the cultural heritage of the area are the main tourist amenities that are pertinent with regard to the proposed development.
 - It is acknowledged that the EIS has referenced the Fáilte Ireland Guidelines for the Treatment of Tourism in EISs.
 - Reference is made to the document produced by EirGrid in conjunction with Fáilte Ireland “Your Grid, Your Views, Your Tomorrow – Responding to Tourism Concerns” which identified how EirGrid will address tourism in the development of its

transmission lines going forward. It is stated that there will be specific focus on identifying and ranking the rural landscape against other environmental criteria as well as exploring how landscape influences tourism in an area.

- While potential impacts have been considered as part of the Human Beings chapter of the EIS, the Landscape chapter relates primarily to residential dwellings and does not make the link or consider the impact on landscape character of the area and its associated importance for tourism.
- It is Fáilte Ireland's view that tourism factors (and in particular the landscape) have been insufficiently developed and the potential impacts on tourism have not been rigorously assessed and that a further evaluation of the potential development on the landscape character of the area should be undertaken.

Applicant's Response:

16 As part of the formal scoping exercise carried out by An Bord Pleanála in December 2013, Fáilte Ireland provided its views in relation to the matters that should be addressed in the EIS as follows (see volume 3B, Appendix 1.4):

- The character of the landscape and the various aspects of the cultural heritage of the area are the main tourist amenities that are at risk from the proposed development.
- The development of the 400 kV project is necessary infrastructure to ensure the sustainable development of the tourism industry in the north-east.
- It is essential that the quality, character and distinctiveness of the landscape is protected as it is an important reason for tourists visiting the country.
- Potential landscape and visual impacts arising from the proposed development should be identified and mitigated where possible as part of the EIA.
- The main tourism assets in the study area comprise the Monaghan Way, Hill of Tara, Bective Abbey and Boyne Valley Drive and its associated attractions. Additional tourism assets and amenities should be identified and assessed in consultation with Fáilte Ireland with data from its Tourism Content System.
- The zone of influence from these tourism assets should be identified.
- High quality photomontages from tourism assets should be provided.

17 Having regard to the advice provided at the scoping stage, the EIS was prepared taking account of all the specified tourism assets and amenities and their settings and approaches all of which are identified and assessed in Volumes 3C & 3D Chapters 4 – Tourism and Amenity, and Chapter 11 – Landscape. In addition, Chapter 10 of Volume 3B (EIS Common Chapters) addresses Interrelationships between Tourism and Cultural Heritage and Landscape.

18 The submission made by Fáilte Ireland notes both the need for the proposed interconnector and the tourism context within which the proposed development will be located. Reference is made to *Ireland's Ancient East*, which was launched in April 2015, which as explained on the website of Fáilte Ireland - www.failteireland.ie is intended, "To offer visitors a compelling motivation to visit the East of our country, we have developed an umbrella destination called Ireland's Ancient East. This new branding will ensure that the area is presented in a cohesive and unified manner. We want to create an emotional pull and inspire visitors to travel to this part of the country".

- 19 The *Ireland's Ancient East* brand proposition is aimed at a particular overseas visitor market segments “*who have indicated they would be more likely to come to Ireland to explore new landscapes, history and culture or simply to take time out from their busy lives and careers to connect with local heritage and nature and their own place within*”. (Source:-<http://www.failteireland.ie/Footer/Media-Centre/Ministers-Donohoe-Ring-launch-%E2%80%98Ireland%E2%80%99s-Ancient-E.aspx/>).
- 20 The intent is to promote a unified area for tourists to travel through at their own pace and itinerary, to experience the heritage of Irish landscape and culture. In essence, this emerging tourism brand is based upon the interrelationship of landscape and cultural heritage.
- 21 The Fáilte Ireland submission does not appear to take issue with the conclusions of the Tourism and Landscape appraisals, nor indeed the Cultural Heritage assessment. Rather, Fáilte Ireland is concerned to ensure that these separate appraisals are adequately linked – in other words, to ensure an appropriate consideration of the Interrelationships between these environmental topics. Given the context of the branding of *Ireland's Ancient East*, this is entirely understandable and reasonable.
- 22 The interrelationship between the environmental topics of landscape, cultural heritage and tourism are summarised in Table 10.6 of the EIS Volume 3B Chapter 10 where it states:

“The tourism industry often relies on the character of landscape and new development can affect landscape character. Therefore, the proposed development could potentially affect a visitor experience if:

- *a particular tourist destination is affected to a degree that a sensitive aspect of the landscape character is significantly changed,*
- *if the general landscape character is changed in such a way as to alter characteristics that are promoted by the tourist industry,*
- *If the proposed development adversely affects an appreciation of the landscape's time depth.*

The OHL will be visible from some short sections of the Boyne Valley Driving Route, from Bective Bridge and within and the Blackwater Valley. This may be perceived as reducing the attractiveness of these areas for tourism and amenity purposes, although the adverse effects are localised.

- 23 The main basis for the appraisal and conclusions of the proposed development on tourism assets and amenities in Volumes 3C & 3D Chapters 4 – Tourism and Amenity arises from the conclusions of the assessment in Chapter 11 Landscape. Having regard to the submission of Fáilte Ireland, however, there appears to be a benefit in strengthening the discussion of potential interrelationships between Landscape, Cultural Heritage and Tourism arising from the proposed development. This is set out below.

The Interrelationship of Tourism and the Landscape

- 24 The proposed development will introduce new overhead transmission infrastructure into the rural landscape of Counties Monaghan, Cavan and Meath. The Landscape appraisal set out in the EIS is based on landscape resources which have a tourism relevance; these include views of amenity value, historic landscapes, protected views, tourist driving routes (including scenic viewpoints), waymarked paths and cycle routes, landmarks, and the setting of features of cultural and heritage interest.

- 25 From a tourism perspective, however, it is acknowledged that the “everyday landscape” is also of importance, as it may contain the road, rail and other linkages between tourism attractions and destinations, tourism accommodation locations etc.
- 26 The landscape and visual evaluation concludes that “*the highest physical landscape effects will occur at the construction stage*” (Sources:- EIS Vol 3C – Chapter 11 Page 28 and EIS Vol 3D – Chapter 11 Page 36) due to a number of activities along the route including the removal of vegetation and mature trees, construction vehicle movements, visibility and the introduction of site access routes, a construction compound as well as the use of guarding positions where the conductor is to be strung over roads and rivers etc. All of these activities would be temporary and reversible (assuming successful vegetation reinstatement) but have the potential to be encountered by visitors either staying in, or transiting the area of the development during the temporary construction period.
- 27 In respect of the proposed development, however, these temporary landscape construction impacts on tourism are unlikely to be significant due to:-
- The linear nature of the proposed project with construction broken down into a number of “isolated areas of activity which are limited in size” (Sources: - EIS Vol 3C – Chapter 11 Page 27 and EIS Vol 3D – Chapter 11 Page 36) and which would last for a short duration in any one locality.
 - Commitments to appropriate mitigation measures e.g. The Outline Traffic Management Plan EIS Volumes 3B Appendix 7.2 controlling periodic disruption along local roads in the area during construction.
- 28 Consideration of the sequencing and programming of construction activities where possible at or in the vicinity of tourism areas and associated driving routes would be beneficial. For example, in 2013, only 19% of all overseas Holiday visitors to the North-West tourism region (including Monaghan and Cavan) and 23% of all overseas visitors to the East & Midlands tourism region (including Meath) visited during the six month period January to March and October to December. The corresponding figures for domestic visitors to both regions are 35% and 40% respectively. (Source: - Fáilte Ireland “Regional Tourism Performance in 2013”).
- 29 Overall, whilst the visual effects of the construction of the pylons are assessed as being “*temporary and locally significant*” (Sources:- EIS Vol 3C – Chapter 11 Page 27 and EIS Vol 3D – Chapter 11 Page 36), this would be unlikely to be significant for tourism due to:-
- The relatively short nature of a tourist stay e.g. a short break of 2-3 days, or one week holiday, or two week main holiday visit, which in comparison to residents of an area would limit (in terms of time) visitor exposure to the project construction.
 - The generally transitory nature of tourists during an Irish rural holiday stay e.g. travelling around, moving between locations - rather than remaining in one place/locality for an extended period of time, or, for the holiday duration.
 - The careful siting of the proposed development, away from key tourism destinations, and with intervening roadside hedgerow screening along driving routes to and from those tourism destinations, and routes within the wider area of Ireland’s Ancient East.
 - As noted above, the linear nature of the project will mean that construction in any one area will be isolated and limited in size.

- 30 In terms of the operational phase of the proposed development, a route selection process was followed which scoped out alignment options to produce an alignment that “*avoids higher ground, minimises changes in direction, visibility on skylines and proximity to waterbodies and that avoids or minimises excessive proximity or dominance on sensitive visual receptors such as scenic routes, tourism and leisure amenities and facilities*” (Sources:- EIS Vol 3C – Chapter 11 Page 81 and EIS Vol 3D – Chapter 11 Page 94).
- 31 In this regard, and in consideration of the specific reference in the Fáilte Ireland submission referencing EirGrid’s review of its approach to Tourism, there was considerable focus upon ensuring that the importance of the rural landscape, and its potential for tourism, was considered in the evaluation of corridor and route options for the proposed development.
- 32 Notwithstanding this, although it is concluded that the operation of the proposed development “*will not directly inhibit any tourist and amenity activities along its route*” (Sources:- EIS Volume 3C – Chapter 4 Page 14 and EIS Volume 3D – Chapter 4 Page 13) and that “*the route selection stage resulted in the avoidance of the parts of the landscape most sensitive to an overhead electricity line*” (Sources:- EIS Volume 3C – Chapter 11 Page 81 and EIS Volume 3D – Chapter 11 Page 94), the Tourism and Amenity evaluation acknowledges that where there is an assessed reduction in the visual amenity of a local area, this “*may be perceived as reducing the attractiveness of an area used for tourist and amenity related activities*”. (Sources: - EIS Volume 3C – Chapter 4 Page 14 and EIS Volume 3D – Chapter 4 Page 13). Potential tourism receptors where such reduction in visual amenity has been identified are:-
- **The Monaghan Way** - The EIS identifies the waymarked 64 km Monaghan Way as being “considered the main tourism asset in the vicinity of the development” (Source EIS Volume 3C – Chapter 4 Page 14). The Monaghan Way runs parallel to the proposed route alignment for approximately 2 km of this 64 km length at a distance of between 0 – 400m; longer distance intermittent views would be possible for distances up to 1.5 km from the line. The proposed alignment crosses the route of the Way once at Lemgare Rocks in the Mullyash Uplands landscape unit. The section that parallels and crosses the line route “will experience open views of towers at close proximity where there is no intervening vegetation, resulting in localised significant visual effects”. (Source: - EIS Volume 3C – Chapter 11 Page 43). Although this section of the walking route forms only a small part of the long distance way which crosses through a mixture of remote and inhabited landscapes, the development “will affect a part of the walking experience, introducing a more industrial landscape character along the route for approximately 2 km”. (Source: - EIS Volume 3C – Chapter 11 Page 43).
 - **The Boyne Valley Driving Route (BVDR)** – the driving route promoted by Fáilte Ireland bisects the Blackwater Valley and Boyne Valley landscape units. The proposed development crosses the R147 within the Blackwater Valley which forms part of the BVDR and would be locally visible for a short distance. The proposed line also crosses the BVDR in the Boyne Valley, but the line crossing “does not interfere with specifically significant views from the Boyne Valley Driving Route” (Source:- EIS Volume 3D – Chapter 11 Page 77).
 - **From Bective Bridge** – The protected view northward from Bective Bridge towards Bective Abbey “will not be affected by the proposed development” (Source: - EIS Volume 3D – Chapter 11 Page 76). The protected view south from Bective Bridge would change where pylons would be visible in conjunction with the River Boyne, and although it is acknowledged that there would be adverse visual effects, these would be localised. It is also noted that the viewshed southwards from the Bridge includes

dwellings and agricultural sheds and other buildings in the foreground and middle ground.

- **The Blackwater Valley** – The Blackwater Valley is classified in the Meath Landscape Character Assessment as being of very high value and regional importance. “It is also described as being an area of potential Tourist Attraction” (Source: EIS Volume 3D – Chapter 11 Page 24). The proposed development would be visible from roads “up to 1-1.5km from the line where there is no intervening vegetation or topography” and the line “will be openly visible” (Source:- EIS Volume 3D – Chapter 11 Page 63 and 65 respectively) at the crossing point of the R147 - which forms part of the BVDR. Whilst it is acknowledged that there would be significant adverse visual effects in the Blackwater Valley, these would be localised.

33 Where such adverse – but localised - visual effects have been identified, proposed mitigation measures (e.g. reinstated or additional planting), combined with the careful siting of the proposed towers (e.g. the “back-clothing” of pylons against the adjacent landform where possible) will minimise some landscape effects and associated impacts on attractiveness of affected local area for tourists who may be passing through these areas on the way to and from the various heritage destinations which occur across *Ireland's Ancient East*.

34 Overall, the interrelationship of tourism and the landscape in this part of *Ireland's Ancient East* is outlined in some detail above. It is considered that the potential for impact on tourism is localised. Any impact on local tourism resulting from the construction and operation of the proposed interconnector development must be considered in respect of the strategic need for and importance of the project, and the careful consideration of alternative routes for the proposed overhead line in this area.

The Interrelationship of Tourism and the Cultural Heritage

35 The EIS Cultural Heritage analysis and evaluation of the proposed project includes archaeological heritage, architectural heritage and “other” cultural heritage (e.g. Teltown folklore and the Baile Ghib Gaeltacht region).

36 A Fáilte Ireland survey “Cultural Product Usage Among Overseas Visitors” (July 2014) provides a profile of both overseas visitors and overseas holidaymakers by cultural activity (in 2012) for the North-West tourism region and the East & Midlands tourism region. In the survey, cultural activities are defined as visiting gardens, historic houses, castles, museums, monuments, art galleries, heritage interpretive centres and cultural/historical visits. **Table 11.2** summarises the survey findings. (http://www.failteireland.ie/Failteireland/media/WebsiteStructure/Documents/3_Research_Insights/1_Sectoral_SurveysReports/Overseas-visitors-participation-in-cultural-activities-in-2013.pdf?ext=.pdf)

Table 11.2: Summary of Fáilte Ireland survey “Cultural Product Usage Among Overseas Visitors” (July 2014)

	North-West Region (includes Monaghan & Cavan)		East & Midlands Region (includes Meath)	
	Visits to Sites of Historical & Cultural Interest	Visits to Gardens	Visits to Sites of Historical & Cultural Interest	Visits to Gardens
% of Overseas Visitors to Region visited “using Cultural Products”	6	8	11	12
% of Overseas Holidaymakers to Region visited “using Cultural Products”	8	9	14	11

- 37 While these figures are currently relatively low, it is anticipated by Fáilte Ireland that the cultural heritage will form the kernel of the *Ireland's Ancient East* strategy.
- 38 The cultural heritage evaluation presented in the EIS addresses those archaeological sites “which have a potential to be directly impacted upon by the proposed development” (Sources: - EIS Volume 3C – Chapter 14 Page 41 and EIS Volume 3D – Chapter 14 Page 54) and similarly for those sites of architectural importance (Source: - EIS Volume 3D – Chapter 14 Page 67). The interrelationship of cultural heritage with tourism and the landscape is equally important to understand, as developed further in this response submission.
- 39 The potential temporary interactions between Cultural Heritage and Tourism during the project construction phase has similarities with the potential interrelationship impacts between Landscape and Tourism, specifically comprising:-
- The linear nature of the proposed project, with construction occurring at specific local areas which are limited in size, and which would last for a short duration at, or in the vicinity of, or on the approach to, any one of the archaeological or architectural sites identified in the “Potential Impacts” sections of both EIS Cultural Heritage chapters.
 - Commitments to appropriate mitigation measures e.g. temporary buffer demarcations around archaeological and architectural sites to prevent accidental damage during construction, confirmation of appropriate temporary access routes and the use of temporary ground protection at work site accesses, line stringing and guarding areas should result in “no inadvertent physical impacts”. The consideration of the programming of construction activities where possible to minimise disruption at, in the vicinity of, and on the approach routes to those cultural heritage sites of greatest existing and potential tourism value, and during peak tourist periods, would also be beneficial.
- 40 Therefore, whilst the construction activities associated with the proposed project construction could temporarily reduce the attractiveness of directly affected cultural heritage sites and settings and approach routes for tourists, the linear nature and length of the interconnection development c.100 km project, combined with the implementation of

appropriate mitigation as outlined above, would minimise any significant adverse, short-term/temporary effects.

- 41 The cultural heritage evaluation concludes that *“the greatest threat”* from the proposed project *“consists of potential impacts on setting throughout the operational phase”* and that *“Given the upstanding linear form of the proposed development, it has the potential to alter a person’s appreciation or enjoyment of a site, structure, monument, feature or cultural heritage landscape even when these are located at a remove from the development”* (Sources:- EIS Volume 3C – Chapter 14 Pages 51 to 52 and EIS Volume 3D – Chapter 14 Page 72). This statement is clearly applicable to visitors to cultural heritage in the vicinity of the proposed development. However, the careful and sensitive routing of the proposed development has ensured that cultural heritage sites *“where there was a high potential for impacts on their setting.....could be avoided as far as was practicably possible”* (Sources: - EIS Volume 3C – Chapter 14 Page 52 and EIS Volume 3D – Chapter 14 Page 73). The route selection process also had regard to approach routes and in particular the Boyne Valley Driving Route – which epitomises the interrelationship of tourism, landscape and cultural heritage.
- 42 While the cultural heritage evaluation acknowledges that *“it has not been possible, given the large influence that an upstanding linear development such as has been proposed.....to avoid all impacts on setting”* (Source:- EIS Volume 3C – Chapter 14 Page 63), and that *“as it is impractical to mitigate these impacts they will persist throughout the operational phase of the development”* (Source:- EIS Volume 3C – Chapter 14 Page 52), from an interrelationship perspective between cultural heritage, landscape and tourism, such an impact is not considered to be significant. This is because the features potentially affected are essentially local features such as ringforts / raths, enclosures, demesne landscapes and churches. It is, however, acknowledged that these local features could contribute in some way to the overall tourism brand that is *Ireland’s Ancient East*.
- 43 The Tourism and Amenity evaluation does however identify three key cultural heritage assets within c.6km of the proposed project. Given the importance of their setting, these assets also have a significant interrelationship with Landscape in the context of the overall tourism product of *Ireland’s Ancient East*). Other tourism assets such as Bru na Boinne are over 20km from the proposed development and do not have the potential for to be impacted given this distance. These assets are:
- ***The Hill of Tara (the Tara Complex)*** which is located c.6km from the proposed alignment and attracted 9,600 visitors in 2013, with an average of 10,950 annual visitors between 2009 and 2013. (Source:- Fáilte Ireland Visitors to Tourist Attractions 2009-2013 report).
http://www.failteireland.ie/FailteIreland/media/WebsiteStructure/Documents/3_Research_Insights/1_Sectoral_SurveysReports/Visitors_to_tourist_attractions_in_Ireland_2009-2013.pdf?ext=.pdf.
The Tara Complex *“is one of Ireland’s premier archaeological sites and tourist attraction and given its elevated position and expansive views its sensitivity to impacts on setting is very high”*. (Source:- EIS Volume 3D – Chapter 14 Page 73). The cultural heritage evaluation is that the magnitude of the impact of the proposed development on the setting of the Tara Complex *“would be minor”* and the overall significance of impact is *“considered to be slight”* (Source:-EIS Volume 3D – Chapter 14 Page 73). This impact reflects the interrelationship between landscape, tourism and cultural heritage in respect of one of the key sites of *Ireland’s Ancient East*.

- **Trim Castle** is also located c.6km from the proposed project alignment. The Castle attracted 48,179 visitors in 2013, with an average of 59,150 annual visitors between 2009 and 2013 (Source:- Fáilte Ireland Visitors to Tourist Attractions 2009-2013), and can also be considered as a key site of *Ireland's Ancient East*. Trim Castle is not included as part of the Cultural Heritage evaluation, given that it will not be affected by the proposed development. The EIS Landscape chapter evaluation of the potential visual effects on the Boyne Valley Landscape Unit identifies Trim Castle as a key Landscape feature but states that there will be no potential visual effect on the Castle "*due to the distance from the proposed development*" (Source:- EIS Volume 3D Chapter 11 Page 77).
- **Bective Abbey & Tower House** is a National Monument in the care of the Office of Public Works (OPW) and is located c.1 km from the proposed project alignment. Neither Fáilte Ireland nor the OPW publish visitor numbers to Bective Abbey. The EIS cultural heritage evaluation states that the site "*is a well known amenity with good signage directing visitors and has a high sensitivity to impacts*" (Source:- EIS Volume 3D Chapter 14 Pages 84); whilst the proposed route alignment has been located as far to the east as possible without compromising existing constraints provided by Trim Airfield and the Draft Tara Skryne Landscape Conservation Area, during the operational life of the proposed project "*there will be a permanent, negative impact of moderate significance*" on the Bective Abbey site. (Source: - EIS Volume 3D Chapter 14 Pages 84, 85 & 91). The EIS Landscape chapter evaluation of the potential visual effects on the Boyne Valley Landscape Unit includes Bective Abbey and states that "*whilst inside Bective Abbey, views are either enclosed or orientated towards the river and away from the line route*" (Source:- EIS Volume 3D Chapter 11 Page 76), views from the top of the Bective Abbey steps would result in pylons being "*partially visible on the skyline*" although "*the visibility of the towers would be dependent on weather conditions*" (Source:- EIS Volume 3D Chapter 11 Pages 79 & 80).

It is acknowledged that Bective Abbey is also likely to comprise a key heritage site within *Ireland's Ancient East*. The combination of both the Cultural Heritage impact and Landscape visual effects on the Bective Abbey National Monument site raises the potential for "*reducing the attractiveness of this location for tourism and amenity purposes*" (Source:- EIS Volume 3B Chapter 10 Page 49) although it is concluded that this "*will not be significant*" (Source:- EIS Volume 3B Chapter 10 Page 31) given that the inherent value of Bective Abbey as a visitor attraction lies in the integrity of its well-contained built form, and its immediate curtilage – extending primarily from its roadside car park to the Abbey buildings, and its proximity to the River Boyne.

44 Having regard to all the above, as well as to the provisions of the Landscape, Cultural Heritage and Tourism chapters of the EIS (contained in Volumes 3C & 3D of the EIS), and the interrelationship between these environmental topics (contained in Volume 3B of the EIS and developed further in this submission), it is considered that the application documentation and this response presents a comprehensive explanation of how landscape and cultural heritage influences tourism in the area of the proposed development which is currently being branded by Fáilte Ireland as *Ireland's Ancient East*. This approach is a key Commitment arising from EirGrid's review of its approach to Tourism.

45 This response serves to expand upon the interrelationship between tourism, landscape and cultural heritage originally provided at Chapter 10 of Volume 3B of the EIS submitted with the application, thereby allowing an enhanced understanding of the nature of existing and potential tourism in this area, and ensuring that any potential impact of the proposed development on tourism can be adequately evaluated and mitigated.

11.3.2 Monaghan County Council (SI-2015-0215)

- 46 Monaghan County Council refers to recently published policy documents by Fáilte Ireland "People, Place and Policy – Growing Tourism to 2025" which note the importance of landscape and natural scenery as being motivators for visitors. That report stresses the need for ensuring there is the right balance between meeting the needs of infrastructural investments and protecting the needs of our tourism assets. They refer to the latest Visitor Attitudes Survey which recorded that beautiful scenery and an unspoilt, natural environment as key factors when considering visiting Ireland. This is consistent with the submission of Fáilte Ireland.
- 47 The Council suggests that the importance of the landscape in attracting tourists is especially true of County Monaghan, particularly in the context of the outdoor activity market which is an important market segment for the county. Product offerings are stated to include angling, forest parks, walking, cycling, golf and equestrian.
- 48 The submission states that there are concerns that due to the proximity of the proposed development to lakes within the Castleblayney-Ballybay Lakelands and in particular, to Lough Egish and Lough Morne, there may be a visual impact on the angling amenity of the lakes.
- 49 In relation to walking, the planning authority's submission states that the proposed development will have a negative visual impact on the section of the Monaghan Way in the Clontibret area.

Applicant's Response:

- 50 As detailed in EIS Volume 3C section 4.2.1 Methodology, this section of the EIS has been prepared having regard to the scoping opinion provided by Fáilte Ireland and Monaghan County Council and following Fáilte Ireland's Guidelines on the Treatment of Tourism in an EIS. In responding to the Preferred Project Solutions Report (Volume 3B Appendix 1.3) Fáilte Ireland stated that the main tourism asset in the vicinity of the proposed development is the Monaghan Way. Monaghan County Council considered that the issues raised in the submission by Fáilte Ireland broadly reflect tourism related issues relevant to Monaghan County Council.
- 51 EIS Volume 3C, section 4.4 describes the key tourism attractions and amenities in the area including the Monaghan Way and the lakes and angling amenities of the area. Section 4.5 states that there will be negative local visual impacts at a localised short section of the Monaghan Way and this may result in a slight to moderate localised impact on tourism and amenity.
- 52 Section 4.5 acknowledges that the surrounding landscape is an important setting for activities including angling but that angling is more dependent on water quality and fish stocks. This section further states that while localised sections of the OHL will be visible from these areas (i.e. lakes), and there may be a reduction in the local visual amenity of these areas, it is unlikely to prohibit activities continuing at these locations.
- 53 The degree to which the line route could potentially affect the visual amenities of these areas is evaluated in EIS Chapter 11. Photomontages 1 and 2 provide an illustration of the likely visual impacts along the relevant sections of the Monaghan Way, photomontage 24 provides an illustration of the likely visual impacts from Lough Morne and photomontage 19 provides an illustration of the likely visual impacts from the Lough Egish area.

11.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

11.4.1 Meath County Council Elected Members (SI-2015-0002)

54 Meath County Council Elected Members suggest that the proposed development will impact on the tourism potential of County Meath.

Applicant's Response:

55 As detailed in EIS Volume 3D section 4.2.1 Methodology, this section of the EIS has been prepared having regard to the scoping opinion provided by Fáilte Ireland and Meath County Council and following Fáilte Irelands Guidelines on the Treatment of Tourism in an EIS. In responding to the Preferred Project Solutions Report (Volume 3B Appendix 1.3) Fáilte Ireland stated that they consider that the main tourism asset in the vicinity of the proposed development are the Hill of Tara, Bective Abbey and Boyne Valley Drive and its surrounding attractions. Meath County Council made no specific comments in relation to tourism and amenity in responding the Preferred Project Solutions Report. Section 4.5 of the EIS concludes that the key tourism assets which attract very significant numbers lie in the region of 20km from the proposed development with the Hill of Tara being 6km from the proposed development.

56 Bective Abbey and the Boyne Valley Driving Route both lie within 1km of the proposed development and it is concluded that having regard to the visual impacts at these locations, the proposed Strategic Infrastructure Development may have slight indirect impacts on the attractiveness and associated tourism and amenity value and associated economic activity of these and other areas.

11.4.2 Sinn Fein (SI-2015-0275)

57 Sinn Fein suggests that the proposed development will have an adverse impact on tourism and tourism potential. It refers to the Fáilte Ireland Visitor Attitude Survey and suggests that the EIS has failed to properly take account of the impact of the proposed development on tourism.

Applicant's Response:

58 A response to these issues has been provided previously when responding to the Fáilte Ireland and Monaghan County Council submissions.

11.4.3 Monaghan Anti-Pylon Committee (SI-2015-0278)

59 Monaghan Anti Pylon Committee in relation to this topic state the following:

- Refer to the recently published policy documents by Fáilte Ireland "People, Place and Policy – Growing Tourism to 2025" which note the importance of landscape and natural scenery as being motivators for visitors and that in that document it states the importance of protecting tourist assets while meeting the infrastructure required for future energy needs.
- Identify the type of outdoor activities available in Monaghan and state that tourism growth will be impacted as a result of the visual impacts.

- Identify specific lakes where the proposed development will be visible.

Applicant's Response:

60 A response to these issues has been provided previously when responding to the Fáilte Ireland and Monaghan County Council submissions.

11.4.4 North East Pylon Pressure (SI-2015-032)

61 North East Pylon Pressure in relation to this topic state the following:

- Refers to the Fáilte Ireland Visitor Attitudes Survey which recorded that beautiful scenery and an unspoilt, natural environment as key factors when considering visiting Ireland.
- The proposed development would contradict reasons as to why tourists visit Ireland.
- Suggest that the perceived industrialisation will have an disadvantageous effect on tourism numbers in the area, particularly around North Meath, around the Hill of Tara, south Monaghan and east Cavan.
- Vistas from Trim Castle, Bective Abbey, and the Hill of Tara will be substantially impacted upon and devalued.
- Attractions in the area are identified and it is stated that the EIS has failed to record Bective Abbey on Volume 3D, Figure 4.1.
- While some of the attractions are remote from the proposed development, approach routes to such attractions would be less attractive.
- Reference is made to an Austrian Study which identified losses in tourist numbers in that region following the construction of an OHL and they extrapolate that revenues will fall by €50 – 100 million in the area of the proposed development.
- Specific tourist attractions in County Meath are identified and discussed and it is suggested that overseas visitors will be lost.
- They suggest that there will be specific major adverse business effects on Trim Airfield and Irish Balloon Flights.

Applicant's Response:

- A response to some of the wider tourism issues has been provided previously when responding to the Fáilte Ireland submission
- As detailed in EIS Volume 3D section 4.2.1 Methodology, this section of the EIS has been prepared having regard to the scoping opinion provided by Fáilte Ireland and following Fáilte Irelands Guidelines on the Treatment of Tourism in an EIS.
- In responding to the Preferred Project Solutions Report (Volume 3B Appendix 1.3) Fáilte Ireland stated that it considers that the main tourism assets in the vicinity of the proposed development are the Hill of Tara, Bective Abbey, and the Boyne Valley drive. Vistas from Bective Abbey and the Boyne Valley drive have been captured by Photomontages 63 – 67. Vistas from the Hill of Tara have been captured by Photomontage 68.
- Bective Abbey is described in detail in EIS Volume 3D section 4.4.1.3 and the effects are evaluated in section 4.5. The visual effects are further evaluated in Chapter 11. While Bective Abbey appears on the background OSI map, it does not appear on Figure 4.1 as

a named feature identified by Fáilte Ireland in the same manner as other features. The notes to the figure clearly state that the information was sourced directly from Fáilte Irelands Tourism Content Database and should not be taken as a comprehensive representation of tourism in any particular area. The data base information from Fáilte Ireland was not altered.

- Extrapolation from one study to another should always be undertaken with some degree of caution as it is unclear what triggers such conclusions. Reference to Visitor Attitude Surveys carried out by Fáilte Ireland are more appropriate in an Irish context. It should be noted that Fáilte Ireland have not raised issues referred to in the study quoted.
- Section 4.5 concludes that having regard to the methodology used in the Tourism Impact Assessment and the avoidance of the key tourism assets which attract the largest numbers and associated visitor revenue, tourism impacts are not likely to be significant. It states there may be slight localised impacts on tourism amenities and associated economic activity in the vicinity of Bective Abbey. However, it is noted that this is a destination site based upon its built form and cultural heritage, rather than wholly upon the landscape and views therefore, as occurs with the Hill of Tara.

It is considered that the tourism impact appraisal as presented in the EIS adequately described potential impacts arising in relation to tourism and amenity arising from the proposed development. The information contained in this submission provides a further elaboration on the interrelationships between tourism, landscape and cultural heritage in order to address the issues raised in the submission from Fáilte Ireland. This provides the Board with adequate information to carry out its assessment of the potential impact from the proposed development.

12 FLORA AND FAUNA

12.1 OVERVIEW

- 1 Flora and Fauna / Ecology was raised as an issue in approximately 376 no. of submissions/observations received by An Bord Pleanála in relation to the application for approval for the North-South 400 kV Interconnection Development. These submissions are listed in Table 29 of **Appendix 1.2** of this report.
- 2 The topic of Flora and Fauna considers the potential impacts of the proposed development on ecology including flora, fauna, habitats and fisheries. There are a number of recurring issues raised in the submissions and the number and breakdown of submissions / observations in which issues regarding flora and fauna / ecology were raised is listed in Table 30 of **Appendix 1.2** of this report.

12.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Flora and Fauna is examined, analysed and evaluated in Chapter 6 Flora and Fauna, Volumes 3C & 3D of the EIS. The potential impacts of the proposed development on European sites (sites designated as candidate Special Areas of Conservation (cSACs) or Special Protection Areas (SPAs) that form part of the Natura 2000 network) in the surrounding area have also been evaluated. This appraisal of potential significant impacts on the integrity of European sites arising from the proposed North-South 400 kV Interconnection Development is presented separately in the form of a Natura Impact Statement (NIS) which forms Volume 5 of the application documentation. The relevant section, chapter or figure of the EIS or NIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

12.2.1 Lack of land access and reliance on pre-construction surveys

- 4 A number of submissions have raised concerns regarding the lack of access to land for the purpose of ecological survey.

Applicant's Response:

- 5 The requirement of Ecological impact assessment for EIA is to focus on the investigation of likely significant effects, and this requirement informed the rationale used to select key ecological areas and species for detailed study (IEEM 2006⁹, NRA 2009¹⁰). It was readily possible to confirm from the surveys conducted that the vast majority of the study area was not of significant value ecologically, being managed farmland. Hence the requirement for extensive land access was minimised by the nature of the study area habitats in addition to the precautionary project design, which avoided as far as possible, key sensitive locations for wildlife in the study area namely rivers, streams, hedgerows, wetlands and woodlands. Any habitat of ecological value where a tower is proposed to be located was field surveyed and confirmed not to be of high

⁹ Institute of Ecology and Environmental Management (2006). GUIDELINES FORECOLOGICAL IMPACT ASSESSMENTIN THEUNITED KINGDOM

¹⁰ NRA (2009b). Guidelines for Assessment of Ecological Impacts of National Road Schemes. (Revision 2, National Roads Authority);

- 6 However, it should be reiterated that, as the vast majority of tower locations are in managed farmland of low conservation importance, habitats at tower locations were capable of being confirmed from desktop surveys, visual surveys, review of aerial imagery, LiDAR etc. and, where necessary, by field surveys. Access routes proposed to be used for the construction of the proposed development follow existing farm access routes and pass through existing field access points. Farmland habitat is subject to ongoing land management/disturbance, meaning that risks of disturbance to wildlife resulting from the proposed development are low. This minimises the requirements for full walkover surveys as farmland habitats impacted can be evaluated without access. As detailed in section 2.32 of IEEM (2006):

“If it is not feasible within the context of a given project to gain access to land beyond the project site, it should be possible to undertake a simple Phase 1 survey from public highways or other accessible public spaces in the zone of influence. The survey limitations should be described and their effects on the confidence in the conclusions should be assessed.”

- 7 It has been possible to undertake a survey of lands to which access has not been gained by way of desktop surveys, visual surveys, review of aerial imagery, LiDAR etc. Where applicable, any survey limitations have been set out and analysed in the EIS submitted with the application for development approval.
- 8 Detailed mitigation, as described within the EIS, will be implemented during the course of construction, and immediately prior to construction commencing, so as to minimise potential impacts as identified in Chapter 6 of Volume 3C & 3D. Mitigation in this context particularly relates to ameliorating the potential impacts of ground clearance and hedgerow trimming and mitigation measures also take the form of confirmatory surveys for breeding mammals, birds and roosting bats. There is no question of the project placing any reliance on post-consent studies / surveys; rather pre-construction verification survey is a normal and responsible element of the overall construction process, to identify hitherto unforeseen constraints;. Constraints can emerge in the period between the EIS preparation stage and the pre-construction phase, such that they would only be encountered during the intended pre-construction verification survey. This approach is standard for major infrastructural projects, and follows best-practice guidelines for species survey.

12.2.2 Potential Impact on Protected Areas

- 9 Concerns have been raised regarding the potential for the development to affect sites that are designated for nature conservation at a European level – specifically cSACs for qualifying habitats/species designated under the Habitats Directive and SPAs for qualifying birds designated under the Birds Directive.

Applicant's Response:

- 10 Volume 5, NIS details the Appropriate Assessment (AA) process which addresses the potential effects of the development on cSACs and SPAs. The following points are highlighted:
1. European Sites were avoided in the design of the line.
- 11 There will be no direct impact to any European site. The conductors oversail the River Boyne and River Blackwater at two locations. No towers/access routes/construction

activities will be located within any cSAC or SPA boundary. There will be no tree cutting within any cSAC or SPA. The towers have been situated over 50m from the river channels and away from all connecting tributaries.

2. The nature of the construction works means that there is limited potential for indirect impacts – particularly with respect to the River Boyne and River Blackwater cSAC.

12 The development has relatively minor short-term excavation requirements when compared to a road for example. There is no in-stream works proposed. Stringent precautionary mitigation measures will be implemented to avoid any pollutant reaching the European sites or connecting tributaries. Noise/activity disturbance impacts will be temporary. Any tree lopping in habitats potentially linked to the Boyne/Blackwater SPA will be undertaken outside of the bird breeding season and will, therefore, avoid disturbance to breeding kingfisher. An Ecological Clerk of Works [ECoW] will ensure mitigation measures are fully implemented and will undertake pre-construction monitoring for protected species.

3. Whooper Swan populations of remote SPA sites will not be affected.

13 Whooper swan populations in the study area have been monitored for 8 winter seasons. Movements of these local populations occur within the study area and flight diverters are proposed where there is evidence that flightlines cross the alignment. There is no evidence arising from the long term survey undertaken or relevant literature to suggest that Whooper Swan populations associated with remote SPA sites travel so far as to cross the alignment while foraging.

12.2.3 Potential Impact on Protected Species

14 Concerns were raised regarding a number of species, protected at national and/or European level in the study area including otter, badger, bats and the marsh fritillary butterfly.

Applicant's Response:

15 With respect to badger setts and otter holts, mitigation by avoidance of habitats such as unmanaged woody vegetation and associated hedgerows and treelines, as well as drains and streams linked to rivers and lakes was a key factor. Mitigation by avoidance is described in Section 6.6.1 of Volumes 3C and 3D of the EIS. The EIS sets out where the presence of any observed mammals such as Irish Hare, Pine Marten and Red Squirrel were identified this was recorded and any potential effects by the proposed development on such mammals, has been assessed. It should be noted that even with data collected from mammal surveys to date, the transient nature of mammal distribution within the landscape means that detailed mitigation, as described within the EIS, will need to be implemented during the course of construction to ensure no mammals are harmed or disturbed. Pre-construction verification survey is a normal and responsible element of the overall construction process, to identify hitherto unforeseen constraints. Constraints can emerge in the period between the EIS preparation stage and the pre-construction phase, such that they would only be encountered during the intended pre-construction verification survey This is a standard approach for large infrastructure projects.

- 16 With respect to bat surveys, it should be noted that, as set out in section 6.4.5.2.1 of Volumes 3C and 3D of the EIS, potential bat roosts (such as old buildings, churches, caves, houses and other buildings) have been avoided by the route and the alignment of the proposed development. Bat surveys have been carried out as outlined in Chapter 6 of Volumes 3C and 3D of the EIS. Additional bat surveys conducted in 2015 did not record any additional possible tree roosts which could be impacted upon by the proposed development.
- 17 Despite bat surveys being carried out, the difficulty in detecting bat roosts in trees and the transient nature of bats' use of tree roosts means that detailed mitigation, as described within the EIS, will need to be implemented during the course of construction to ensure no bats are harmed. This approach follows NRA (2006)¹¹ guidelines. Pre-construction verification survey is a normal and responsible element of the overall construction process, to identify hitherto unforeseen constraints. Constraints can emerge in the period between the EIS preparation stage and the pre-construction phase, such that they would only be encountered during the intended pre-construction verification survey. In relation to Marsh Fritillary, the area of Drumgallon Bog and Lemgare Rocks was identified as a known habitat supporting Marsh Fritillary in Chapter 6 of Volumes 3C of the EIS. This area was regarded as being sufficiently removed from the development so as to pose no threat to this population. Furthermore, the avoidance of features such as wetlands and species rich wet and dry grassland, means typical Marsh Fritillary habitat will be avoided, and any risks of significant adverse impacts to this species are considered negligible.
- 18 The protected status of the Smooth Newt is outlined in chapter 6 of Volumes 3C & 3D of the EIS, as is the potential for this species to occur in the study area. Following mitigation by reduction as detailed in section 6.6.2 of Volume 3C and 3D of the EIS, it is considered that no measurable impacts will arise to Smooth Newt.

12.2.4 Potential Impact on locally Important Habitats

- 19 Certain submissions raise concerns over potential impacts to locally important habitats such as wetlands and hedgerows.

Applicant's Response:

- 20 Certain submissions raise concerns over potential impacts to locally important habitats such as wetlands and hedgerows.

Applicant's Response:

- 21 The network of hedgerows and treelines is important for native species of flora and fauna and provides connectivity for species between areas of semi-natural habitat throughout the landscape of the study area. Impacts to the vast majority of hedgerows and treelines have been avoided by the location of towers and defined works areas, off hedgerows in farmland of low ecological value. Some limited and localised hedgerow clearance will arise during the construction phase to facilitate development of the towers. In these situations where avoidance was not possible, impacted hedgerows have been identified through survey as being of low or moderate value.

¹¹ NRA (2006d). *Guidelines for the Treatment of Bats during the Construction of National Roads Schemes*;

- 22 No hedgerow removal will be required in order to accommodate access routes and vehicle access. Some hedgerow trimming at these locations may be required to facilitate vehicles. Some tree cutting under the proposed overhead line will also be required.
- 23 The approach to site towers away from hedgerows has meant that impacts have been largely avoided.
- 24 Wetlands of ecological value are a feature of the wider landscape occurring in low lying areas throughout the study area particularly in County Monaghan (see Volume 3C and 3D, Table 6.8 for list of non-designated sites). The design of the development has successfully avoided placing towers and other works areas within any wetland sites of significant ecological importance.
- 25 No habitats conforming to Annex 1 or priority habitats as per Directive 92/43/EEC will be impacted by this development.

12.2.5 Potential Impact on Birds

- 26 The potential collision risk posed by the powerline to bird species, such as populations of Whooper Swan in the study area, was a concern raised in a number of submissions.

Applicant's Response:

- 27 With respect to Whooper Swans, it is submitted that eight years of extensive surveys were carried out, as described in various sections of Chapter 6 of Volumes 3C & 3D of the EIS and the NIS (Volume 5). Foraging and roosting sites for Whooper Swan are dispersed throughout Ireland including the counties of Meath, Cavan and Monaghan. Dawn and dusk surveys were carried out throughout the study area, specifically to target Whooper Swan flight lines. Flock numbers, flight direction, height and flight duration were all recorded. These surveys informed corridor selection and tower spotting to avoid, as much as possible, key sensitive habitats for Whooper Swans. However, given the nature of Whooper Swans daily movements which are between roosts sites and local food sources, not all flight paths can be avoided.
- 28 All recorded flightlines between known feeding and roosting grounds could not be totally avoided by the alignment and therefore mitigation measures are proposed at these locations. While Whooper Swan are known to use areas where powerlines are a feature of the landscape with no significant negative effects on population levels, as a precautionary mitigation measure, bird flight diverters have been proposed at locations where flightlines have been identified or determined as likely to occur. Bird flight diverters have been proven to be successful at reducing collisions with powerlines in a range of international scientific studies. They will deter collisions of swans and other collision risk species such as heron, ducks and raptors. This mitigation approach follows standard international good practice for reducing bird collision risk.

- 29 A number of submissions identify specific locations where flightpaths have been observed, particularly for Whooper Swan. These are addressed below:

Boraghy Lake: The alignment will be marked with flight diverters at this location.

Lough Nahinch area: No significant flightlines have been recorded in the Lough Nahinch area by ornithologists. This area was regularly surveyed and a focus for survey every winter since 2010 (5 years). No significant activity was observed in recent years. Post construction monitoring is described in section 6.7.1 of Volumes 3C and 3D of the EIS to ensure the effectiveness of mitigation measures. This will include continued survey of Whooper Swan sites covered in the eight years survey undertaken for this EIS. This approach will enable the identification of any changes in Swan distribution. **Tower 290:** This area was surveyed yearly since 2008. No Whooper Swans were noted in this area and no flightlines have been recorded in this area by ornithologists. Post construction monitoring is described identified in section 6.7.1 of Volumes 3C and 3D of the EIS to ensure the effectiveness of mitigation measures. This will include continued survey of Whooper Swan sites covered in the eight years survey undertaken for this EIS. This approach will enable the identification of any changes in Swan distribution.

Raferagh Lough: Ecology impacts including specific Whooper Swan mitigation at Raferagh. This mitigation by reduction is detailed in section 6.6.2, Volume 3C of the EIS. The alignment will be marked with flight diverters at this location.

Ballintra: The Whooper Swan flightline at Ballintra is detailed in the EIS and the alignment will be marked with flight diverters at this location. This mitigation by reduction is detailed in section 6.6.2, Volume 3C of the EIS. The alignment will be marked with flight diverters at this location.

Blackwater Valley: Precautionary mitigation by reduction regarding Wildfowl including Whooper Swan in the Blackwater valley are considered in section 6.6.2, Volume 3D of the EIS. The alignment will be marked with flight diverters at this location.

Lough Morne: Precautionary mitigation by reduction regarding Wildfowl including Whooper Swan in the Blackwater valley are considered in section 6.6.2, Volume 3C of the EIS. The alignment will be marked with flight diverters at this location.

12.2.6 Potential Impact on Fisheries

- 30 A number of submissions highlight a potential risk to fish and fisheries within the watercourses in the study area.

Applicant's Response:

- 31 Impacts and appropriate mitigation regarding fisheries protection were outlined in Chapters 6 of Volumes 3C & 3D, and water pollution mitigation controls are outlined in section 8.6 of Volumes 3C & 3D the EIS. Inland Fisheries Ireland (IFI), the EPA and local authorities were consulted and it was recognised within the EIS that watercourses within the study area are significant fishery areas holding Salmon and Trout stocks as well as salmonid spawning and nursery habitats. Pond and lake habitats will be avoided by the

proposed development and any stream/river will be oversailed. Nonetheless, mitigation for the protection of watercourses during construction was set out in section 6.6.2.1.2 of Volumes 3C and 3D of the EIS. It was stipulated that construction practices will adhere to the requirement for the protection for fisheries habitat during construction and development works at river sites, as published by IFI¹².

12.2.7 Potential Impact of Invasive Species

32 A number of submissions highlight the potential risk from invasive species such as Japanese Knotweed.

Applicant's Response:

Japanese knotweed (and other highly invasive species), was not recorded in surveys at any proposed works areas along the alignment., Japanese Knotweed was noted to occur sporadically along roadsides in the wider study area, and therefore precautionary mitigation has been proposed. It is considered that the risk of this species occurring in the vicinity of the proposed development works is negligible, as it is rare in the study area outside of disturbed ground locations and does not typically occur in managed farmland fields where the main works are proposed.

33 As detailed in Section 6.6 of Volumes 3C and 3D of the EIS, the spread and introduction of invasive species and noxious weeds will be avoided by adopting appropriate mitigation measures as per guidance issued by the NRA (2010) Guidelines on the Management of Noxious Weeds and Non-Native Plant Species on National Roads.

34 Mitigation as detailed in section 6.6 of Volumes 3C and 3D of the EIS will be implemented to inform an appropriate method statement during the construction phase of the project if Japanese Knotweeds is encountered and it is listed as a highly invasive species on European Communities (Birds and Natural Habitats) Regulations 2011 [S.I. No. 477 of 2011].

35 The method statement will identify and address the management of Japanese Knotweed and include the following key approaches;

- Any Japanese Knotweed found to occur in the vicinity of working areas will be determined prior to commencement of construction works by an Ecological Clerk of Works.
- This information will be highlighted to works crew with an instruction to avoid disturbance to these areas. Any material within 15m of Japanese Knotweed plants which must be removed from the site will be disposed at an appropriate licensed waste facility.
- Post construction, the works area will be monitored and if Japanese Knotweed appears to have spread onto the works area then it will be treated with an appropriate herbicide in agreement with the landowner.
- This will be continuously monitored for at least 5 years and further treatments conducted to ensure it does not spread and is controlled.

¹² <http://www.fisheriesireland.ie/fisheries-management-1/90-requirements-for-the-protection-of-fisheries-habitat-during-construction-and-development-works-at-ri-1/file>

12.2.8 Impacts to Hedgerows to Facilitate Access Routes

36 A number of submissions highlight the potential impacts to hedgerows.

Applicant's Response:

37 It is not proposed to remove hedgerows along access routes to works sites. Hedgerow trimming may be required in some cases to allow access along some of the routes and the use of mitigation identified in section 6.6.2 of Volumes 3C & 3D of the EIS including an Ecological Clerk of Works [ECoW] and confirmatory surveys will ensure significant adverse impacts are avoided. The nature/ limitations of the access route will inform the types of machinery used to access works areas. For example narrow access roads (<4m) will be trimmed of vegetation (hedgerows retained) and smaller dumpers (<3m wide) will be used to access works areas. As detailed in the EIS, sites of high ecological value will be avoided.

12.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

12.3.1 Department of Arts, Heritage and the Gaeltacht (DAHG) (SI-2015-0207)

38 The Department identifies a number of concerns under key headings as follows.

12.3.1.1 Birds - Ex Situ Impacts

39 **DAHG observation No. 1:** Tower heights of the proposed 400 kV are in range of observed Whooper Swan flight heights (Griffen et al., 2011)¹³.

Applicant's Response:

40 **DAHG observation No. 1:** The Department has suggested that tower heights of the proposed 400 kV are in range of observed Whooper Swan flight heights (Griffen et al., 2011)¹⁴.

Applicant's Response:

41 Griffen et al. (2011) was reviewed in preparing the application documents, including the EIS. Identified potential impacts regarding Whooper Swan collision risk were informed by the flight heights observed during survey and published data on flight heights, including this reference.

42 **DAHG observation No. 2:** The submission outlines species including Whooper Swan, Greenland White-fronted Geese, Greylag Geese and Brent Geese that are highly susceptible to collisions with powerlines (EirGrid Ecology Guidelines 2012¹⁵). The DAHG states that these species overwinter in Ireland's SPAs and suggests that SPA sites to the east and south east of the development are to be specifically screened for potential ex-situ impacts.

¹³Griffin, L., Rees, E. & Hughes, B. 2011. Migration routes of Whooper Swans and geese in relation to wind farm footprints: Final report. WWT, Slimbridge. 87 pp.Cahore Marshes

¹⁴Griffin, L., Rees, E. & Hughes, B. 2011. Migration routes of Whooper Swans and geese in relation to wind farm footprints: Final report. WWT, Slimbridge. 87 pp.Cahore Marshes

¹⁵ <http://www.EirGrid.com/media/Ecology%20Guidelines%20for%20Electricity%20Transmission%20Projects.pdf>

- 43 The Department's view is that the AA should consider ex situ impacts to migratory bird species as outlined above and sites including Wexford Harbour and Sloba SPA (site code 004076), need to be considered in the NIS. This information may need to be established in order for An Bord Pleanála to conduct AA.

Applicant's Response:

- 44 Section 4.3 of the Natura Impact Statement (Volume 5) details the rationale for considering Special Protection Areas in Screening for Appropriate Assessment. The potential for impacts on the conservation objectives of SPA sites remote from the study area was primarily focused on species commonly recorded in the wider study area. For clarity and to address possible ex situ effects on migrating species, a further exercise in Screening SPA sites has been carried out and is presented in this Response Report. This supplementary Screening for Appropriate Assessment is focused on those bird species overwintering in Ireland whose migration from northern latitudes involves potential movements across the Island of Ireland. The exercise is confined to SPA sites that are located to the east and south east of the proposed development.
- 45 This screening information is detailed in **Table 12.1**. Key collision prone "Qualifying Interest" (species) are identified for each SPA and considered in this evaluation.
- 46 This AA screening appraisal was informed by:
- The findings of the winter bird surveys to date (8 winters of data since winter 2007), refer to Winter Bird Report Appendix 6.6 of Volume 3 C and 3D;
 - A detailed literature review of bird species distribution, migration routes (including Merne 1974)¹⁶ and sensitivity (EirGrid 2012, APLIC 2012) to possible effects of the development in particular regarding collision impacts.

In addition, recent surveyor observations (April 2015) of migrating Greenland White Fronted Geese flightlines and flight heights informed the appraisal.

¹⁶ Merne O.J (1974). Irish Birds Report pp 62-71.

Table 12.1: AA Screening Assessment for specific SPA sites south, east and south east of the development in Ireland.

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
<p>North Bull Island SPA (Site Code: IE004006)</p> <p>Baldoyle Bay SPA (Site Code: IE004016)</p> <p>Malahide Estuary SPA (Site Code: IE004025)</p> <p>South Dublin Bay and River Tolka Estuary SPA (Site Code:)</p>	<p>These sites are located in and around Dublin bay, at least 40km south east of the proposed development</p>	<p>Light-bellied Brent Goose</p>	<p>There is no appreciable connection between the area of the proposed development and this SPA for Light-bellied Brent Goose. There is no possibility of significant direct or indirect effects arising on this site (which includes on the qualifying interests) from the proposed development alone or in-combination with other plans or projects.</p> <p>It is considered that flight heights during migration are typically well above the height of the towers and conductors. For example Pennycuik et al., (2011) observed Light-bellied Brent Geese migrating at 2,500 and 3,000m over land. Brent Geese are a coastal species and observed distribution is along the coastline and is therefore significantly removed from the proposed development</p> <p>Brent Geese migrate in the context of an existing wirescape of powerlines, to which the addition of the North-South interconnector will not add significantly. There have been no known reports of mass casualties of Brent Geese colliding with existing powerlines in Ireland. Furthermore, the general orientation of the line in a North-South direction means that species migrating to and from northern countries would be expected to mostly fly parallel to the proposed alignment.</p> <p>It should be noted no Light-bellied Brent Geese or other collision prone Qualifying Interests for this SPA were recorded during flightline surveys or monthly I-Webs surveys in the study area between 2007 and 2015.</p>	<p>No</p>

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
IE004024)				
Rogerstown Estuary SPA (Site Code: IE004015)	This site is located approximately 40km south east of the proposed development.	Light-bellied Brent Goose Greylag Geese (Icelandic population) were very sporadically recorded with a maximum of one observation in a given year. Any records were of low numbers (maximum 3) at the following locations; Cruicetown and Yellow River. They occurred in flocks of Whooper Swan.	There is no appreciable connection between the area of the proposed development and this SPA for Light-bellied Brent Goose (see above) or Greylag Geese. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects The rationale for no possible significant effects to Greylag Geese is based on; <ul style="list-style-type: none"> • very low numbers and no flightlines recorded in the study area of the proposed North-South Interconnection Development, • irregular occurrence and distribution of Greylag Geese, • typical observed avoidance rates by geese is -99.8% SNH (May 2013)¹⁷ of similar collision risk infrastructure (wind farms), 	No

¹⁷ <http://www.snh.gov.uk/docs/A916643.pdf>

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
Poulaphuca Reservoir SPA (Site Code: IE004063)	This site is located approximately 42km south east of the proposed development.	Greylag Goose	<p>There is no appreciable connection between the area of the proposed development and this SPA for Greylag Geese. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects.</p> <p>The rationale for no possible significant effects to Greylag Geese is based on;</p> <ul style="list-style-type: none"> • very low numbers and no flightlines recorded in the study area of the proposed North-South Interconnection Development, • irregular occurrence and distribution of Greylag Geese, • typical observed avoidance rates by geese is -99.8% SNH (May 2013)¹⁸ of similar collision risk infrastructure (wind farms) 	No
The Murrough SPA (Site Code: IE004186)	This site is located approximately 60km south east of the proposed development.	Greylag Goose Light-bellied Brent Goose	<p>There is no appreciable connection between the area of the proposed development and this SPA for Light-bellied Brent Goose. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects.</p> <p>The rationale for no possible significant effects to Greylag Geese is based on;</p> <ul style="list-style-type: none"> • very low numbers and no flightlines recorded in the study area of the proposed North-South Interconnection Development, • irregular occurrence and distribution of Greylag Geese, • typical observed avoidance rates by geese is -99.8% SNH (May 2013)¹⁹ of 	No

¹⁸ <http://www.snh.gov.uk/docs/A916643.pdf>

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
			<p>similar collision risk infrastructure (wind farms),</p> <p>There is no appreciable connection between the area of the proposed development and this SPA for Greylag Geese. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects.</p>	
<p>Cahore Marshes SPA</p> <p>(Site Code: IE004143)</p>	<p>This site is located approximately 115km south east of the proposed development.</p>	<p>Greenland White-fronted Goose</p>	<p>No Greenland White Fronted Geese were observed flying through, or using the study area. Surveys conducted included months when Greenland White Fronted Geese would potentially migrate across the study area (April and October).</p> <p>The population of Greenland White-Fronted Geese using the Cahore Marshes is identified by National Parks and Wildlife Service²⁰ as part of the Wexford Slobs population.</p> <p>Other species detailed are either non sensitive, well removed (>120km), dealt with in the NIS (Volume 5) or have been addressed in sites detailed above.</p> <p>Greenland White Fronted Geese at the Cahore Marshes SPA and Wexford Harbour and Slobs SPA migrate across the country typically in late October (Autumn passage) and April (Spring passage). Observations of migrating Greenland White Fronted Geese by Merne (1974) determined that migrating geese fly north from Wexford along the Slaney river valley before turning north west and continuing in a diagonal straight line across the midlands, towards Donegal. This north westerly line commences just past the northernmost part of the Blackstairs mountains. This flight line avoids the proposed development entirely.</p> <p>Monitoring of satellite trackers on 2 no. geese was conducted by Livingstone Ripley</p>	<p>No</p>

¹⁹ <http://www.snh.gov.uk/docs/A916643.pdf>

²⁰ <http://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004143.pdf>

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
			<p>Waterfowl Conservancy [4] in 2010. The findings confirmed a north westerly flightpath from Wexford. However, this recorded flight line avoids the proposed development entirely.</p> <p>Moreover, a general north westerly migration route direction was noted by the Ornithologist engaged in preparing the application documents in April 2015 when > 400 Greenland White Fronted Geese were observed flying at > 100m high in a north westerly direction over the village of Moone in County Kildare. Again, it should be noted that this flight line avoids the proposed development entirely.</p> <p>In summary the flight records detailed above from the 1970’s, 2010 and heights and directions of flight observed in 2015 indicate that Greenland White Fronted Geese follow a relatively defined migration route to/ from Wexford, which is follows:</p> <ul style="list-style-type: none"> • located away from the proposed development; and • at a height which overflies all proposed overhead line infrastructures. <p>There is no appreciable connection between the area of the proposed development and this SPA for Greenland White-Fronted Geese. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects.</p>	
<p>The Raven SPA (Site Code: IE004019) Wexford</p>	<p>These sites are located at least 130km south east of the proposed development.</p>	<p>Greenland White-fronted Goose</p>	<p>No Greenland White Fronted Geese were observed flying through, or using the study area. Surveys conducted included months when Greenland White Fronted Geese would potentially migrate across the study area (April and October).</p> <p>Greenland White Fronted Geese at the Raven SPA and Wexford Harbour and Slobs SPA migrate across the country typically in late October (Autumn passage) and April (Spring passage). Observations of migrating Greenland White Fronted Geese by</p>	

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
<p>Harbour and Slobs SPA</p> <p>(Site Code: IE004076)</p>			<p>Merne (1974) determined that migrating geese fly north from Wexford along the Slaney river valley before turning north west and continuing in a diagonal straight line across the midlands, towards Donegal. This north westerly line commences just past the northernmost part of the Blackstairs mountains. This flight line avoids the proposed development entirely.</p> <p>Monitoring of satellite trackers on 2 no. geese was conducted by Livingstone Ripley Waterfowl Conservancy [4] in 2010. The findings confirmed a north westerly flightpath from Wexford. However, this recorded flight line avoids the proposed development entirely.</p> <p>Moreover, a general north westerly migration route direction was noted by the Ornithologist engaged in preparing the application documents in April 2015 when > 400 Greenland White Fronted Geese were observed flying at > 100m high in a north westerly direction over the village of Moone in County Kildare. Again, it should be noted that this flight line avoids the proposed development entirely.</p> <p>In summary the flight records detailed above from the 1970’s, 2010 and heights and directions of flight observed in 2015 indicate that Greenland White Fronted Geese follow a relatively defined migration route to/ from Wexford, which is follows:</p> <ul style="list-style-type: none"> • located away from the proposed development; and • at a height which overflies all proposed overhead line infrastructures. <p>There is no appreciable connection between the area of the proposed development and this SPA for Greenland White-Fronted Geese. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with</p>	

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
			other plans or projects.	
Wexford Harbour and Slobs SPA (Site Code: IE004076)	This site is located approximately 130km south east of the proposed development.	Whooper Swan	<p>A key focus of the NIS when considering the potential for significant effects to Whooper Swans as qualifying features of SPAs arising from the proposed North-South Interconnection Development was to consider known ‘staging sites’. These are sites where Whooper Swan associated with the study area for the proposed North-South Interconnection Development may potentially make landfall at some point during their migration to or from Iceland. Wexford Harbour and Slobs SPA is located approximately 130km to the south east of the study area. Tracking (satellite) records for whooper swan available on the WWT website, and also described in Griffin et al (2010)²¹ and Griffin et al (2011)²² were examined, as described in the NIS, and there is no indication that there are flightlines (migratory or national) between the study area and the Wexford Harbour and Slobs SPA site (refer to Volume 5, NIS, Appendix C).</p> <p>In any event, Whooper Swan migrate across the country in the context of an existing wirescape of powerlines, to which the addition of the North-South Interconnection Development will not add significantly. There have been no reports of any significant numbers of casualties of migrating Whooper Swan colliding with existing powerlines. Furthermore the general orientation of the alignment of the proposed development, in a North-South direction, means that species migrating to and from northern countries will fly parallel to the proposed alignment.</p> <p>There is no appreciable connection between the area of the proposed development and this SPA for the Whooper Swan. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from</p>	No

²¹ Griffin, L; Rees, E & B. Hughes (2010). *Whooper Swan Cygnus Cygnus migration in relation to offshore wind farms. BOU Proceedings – Climate Change and Birds.*

²² Griffin, L; Rees, E & B. Hughes (2010). *Migration routes of Whooper Swans and geese in relation to wind farm footprints.* Final Report to DECC. November 2001. WWT.

European site	Distance and orientation of SPA from proposed development	Sensitive Qualifying Interests Identified (Migrating geese and swans)	Determination of possible ex-situ effects of the development on migrating species	Possibility of Significant Effects? (If Yes Progress to Stage 2 AA)
Tacumshin Lake SPA (Site Code: IE004092)	This site is located approximately 150km south east of the proposed development.	Whooper Swan Bewick Swan	the proposed development alone or in-combination with other plans or projects. Whooper Swan are discussed under Wexford Harbour and Slobs SPA (see above) Bewicks swan are a scarce wintering species which fly in from Siberia across Europe ²³ . This flight path avoids the alignment of the proposed development.	No
Ballyteigue Burrow SPA (Site Code: IE004020)	This site is located approximately 150km south east of the proposed development.	Light Bellied Brent Goose	There is no appreciable connection between the area of the proposed development and this SPA for Light Bellied Brent Goose. There is no possibility of significant direct or indirect effects arising on this site which includes on the qualifying interests from the proposed development alone or in-combination with other plans or projects. It is considered that flight heights during migration are typically well above the height of the towers and conductors. For example Pennycuik et al., (2011) observed Light-bellied Brent Geese migrating at 2,500 and 3,000m over land. Brent Geese are a coastal species and observed distribution is along the coastline and is therefore significantly removed from the proposed development Brent Geese migrate in the context of an existing wirescape of powerlines, to which the addition of the North-South interconnector will not add significantly. There have been no known reports of mass casualties of Brent Geese colliding with existing powerlines in Ireland. Furthermore, the general orientation of the line in a North-South direction means that species migrating to and from northern countries would be expected to mostly fly parallel to the proposed alignment. It should be noted no light-bellied Brent Geese or other collision prone Qualifying Interests for this SPA were recorded during flightline surveys or monthly I-Webs surveys in the study area between 2007 and 2015.	No

²³ <http://www.noldus.com/innovationworks/products/tracklab/wildlife>

12.3.1.2 Birds - Mitigation Measures and Data Gaps

47 **DAHG observation:** *"The proposed Line marking design seems to be at odds with EirGrid's 'Ecology guidelines for electricity transmission projects'" and "No evidence provided of efficacy of proposed flight diverters".*

Applicant's Response:

48 Whooper Swan was identified at an early stage in the project as a key sensitive species to the proposed development. In the first instance, where possible, the line has been designed to avoid areas identified as high collision risk for this and other bird species. In instances where some possibility of an impact remains, EirGrid proposes to install flight diverters on sections of the line where flightlines for Whooper Swan were recorded during the eight year survey period (refer to Chapter 6 of Volumes 3C & 3D of the EIS).

49 The DAHG submission notes two options with regard to modification to powerlines; removing the earth wire, or fitting this wire with markers. A coiled device line marker has been proposed in this instance.

50 As highlighted in section 6.6.2.2.2 of Volume 3C and section 6.6.2.3.2 of Volume 3D, swan flight diverters type, effectiveness and configuration are discussed in detail in APLIC (2012) and a review of this document informed the proposed mitigation. A key requirement of a diverter is that it increases the diameter of the line and a coiled/spiral device was chosen following APLIC (2012) and Bureau Waardenburg/Prinsen et al, 2011. It is not considered that this design is contradictory to the EirGrid (2012) guidelines which list 'thickened wire coils'. Durability was a consideration and accordingly, a device made of UV stable high impacted PVC was chosen (following guidance in Bureau Waardenburg/Prinsen et al, 2011). Grey coloured devices were chosen as these retain colour (APLIC, 2012). Furthermore this device was technically suitable for installation on the earthwire of a 400 kV powerline. The type of diverter selected aligns with current best practice guidance.

51 The submission states that *"the Department cannot see any evidence provided within as to the efficacy of such methods"*. However, the relevant information was included in Appendix 6.6 of Volume 3C & 3D 'Winter Bird Survey 2014-2015' which informed the Ecological Impact Appraisal and mitigation measures proposed. Appropriate information to address this submission has been included below together with the appropriate references.

Review of Line Marking Effectiveness

Most studies highlight the earth wire as the main cause of collision for birds. This is because it is relatively more difficult to see and is located at the top of the pylon where birds are most likely to collide. This is where flight diverters (e.g. Swan Flight Diverter) are installed. Diverters come in a wide range of types and specifications. Recommendations based on a comprehensive review of line markers available carried out for the Beaulieu Denny 400 kV project for similar bird constraints/ species highlight that the best all round markers are Swan Flight Diverter (e.g. Dulmison or Tyco Electronics) constructed from high-impact grey PVC (UV stabilised) fitted at 10m intervals. This or a similar product will be recommended for the proposed development.

Marking the earth wire with flight diverters has been shown in numerous studies to be a useful mitigation tool at reducing potential collision impacts with powerlines and is now a standard practise by electricity utility companies throughout the world for existing and new HV electricity line projects.

Tyco electronics, manufactures of the type of diverter proposed for this project, state that studies have shown that proper installation of bird flight diverters may reduce bird collisions by "up to 90%"²⁴.

Examples of where "swan flight diverters" and other flight diverter types have been shown to reduce collisions or where they are being installed is detailed below.

- San Luis National Wildlife Refuge Complex, Merced County, California, USA²⁵.
- Skagit County, Washington home to the largest wintering concentration of Trumpeter Swans (similar species to Whooper Swan see plate 1 below) in the United States. The Trumpeter Swan Society in USA "welcomed" proposals to mark lines here.



Plate 1: Trumpeter Swans

In Minnesota, Xcel Energy of Minneapolis planned to install nearly 3,400 swan flight diverters in Minnesota and Wisconsin. The Teton Regional Land Trust (TRLT) is working with the Fall River Rural Electric Cooperative (FRREC) on the west side of Yellowstone to add or replace at least 120 bird diverters on electricity lines in areas frequented by

²⁴ http://energy.tycoelectronics.com/rrg/dulm_rrg/232.pdf

²⁵ <http://www.ventanaws.org/conservation/electricitylines.htm>

Trumpeter Swans. The use of flight diverters again serves to highlight that these diverters are effective and accepted by the Trumpeter Swan conservation organisation in the USA for existing electricity lines.

Swan flight diverters in areas where conflicts occur (Trumpeter swan collision impacts) were highlighted as “effective in minimising this threat” in Mitchell (1994) taken from Slater (2006)²⁶.

Initial findings indicated no collision-caused mortalities of trumpeter swan at sections of transmission line following installation of swan flight diverters at a site in Montana USA (2004/2005 study)²⁷.

Mackenzie Bradshaw Environmental Consultants - MBEC (2006) cite a large number of studies where the effectiveness of flight diverters at reducing collision risks by collision prone bird species including swans has been confirmed. Various studies showed a reduction in collisions of between 57 and 89%.

Barrientos *et al.* (2011), reviewing 21 wire marking studies, conclude that wire marking reduced bird mortality by 55-94%.

Jenkins *et al.* (2010) conclude that, barring some notable exceptions, “any sufficiently large form of marker (which thickens the appearance of the line at that point by at least 20 cm, over a length of at least 10-20 cm), placed with sufficient regularity (at least every 5-10 m) on either the ground wires (preferably) or the conductors, is likely to lower general collision rates by 50-80%”.

Frost (2008), found that the installation of flight diverters on transmission lines adjacent to a sensitive lake location reduced mortalities of Mute Swan from a maximum of 21 (pre diverter installation) to one bird after markers were installed.

The Beaulieu Denny 400 kV project, which was granted permission in 2010 in Scotland recommended flight diverters for stretches of line where a potential collision risk was determined. Bird flight diverters including swan flight diverters were recommended. This project passed close to or through SPA sites including South Tayside Goose Roost Ramsar and SPA (0.12km); Firth of Forth Ramsar and SPA (1.5km) and Drumochter Hills SPA (crosses). The abundance and diversity of collision prone bird species in the Scottish study area is significantly more than in the overall North South 400 kV Interconnection Development study area (MSA and CMSA). For example the Goose Roost Ramsar and SPA site alone regularly supports over 20,000 large waterfowl species which is greater than all the larger wildfowl numbers in the whole of the MSA and CMSA (likely maximum < 600 swans). It is in the context of these high waterfowl numbers that the Scottish Government considered the line marking mitigation detailed in the EIS and consented planning.

The Wildfowl & Wetlands Trust working with Electricity North West in West Lancashire UK (March 2014)²⁸ are currently examining various types of line diverters for sections of alignment crossed by internationally significant numbers of Whooper Swan and Geese species. The use of diverters was expressed as a very positive approach for reducing impacts to swans and Geese as collisions with unmarked powerlines were considered “a major cause of death for them”. One type of plastic diverter, clipped on the power lines,

²⁶ Slater, G.L. (2006, August 17). Trumpeter Swan (*Cygnus buccinator*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: <http://www.fs.fed.us/r2/projects/scp/assessments/trumpeterswan.pdf>

²⁷ http://www.trumpeterswansociety.org/docs/20th_conf/20becker_and_lichtenberg.pdf

²⁸ WWT (Wildfowl and Wetlands Trust) 2013. Power line research to reduce risks for tens of thousands of swans and geese. www.wwt.org.uk/news/news/2013/08/wwt-news/power-line-research-to-reduce-risks-for-tens-of-thousands-of-swans-and-geese/

is packed with crystals that absorb ultra-violet light by day to emit a purple ultraviolet light for 10 or 12 hours after nightfall. The birds can see the plastic roundels glowing violet by night. Fluorescent orange or yellow reflective materials flap in the wind to divert the birds by day. No data is yet available on the findings of this study (July 2014).

More recent updated draft guidelines produced by Bureau Wardenberg (2011) on approaches to avoid and mitigate impacts to migratory birds have been drafted. A key observation is that self-supporting towers which do not require stay wires are preferred. Over structures with stay wires. Stay wires increase collision risk to birds. Self-supporting towers are proposed for this project.

12.3.1.3 Existing Information on Bird Collisions/ Monitoring Programme

12.3.1.4 Monitoring for Effectiveness of Bird Deflectors

52 In its submission to the Board, DAHG has suggested that, *"It would be useful if a targeted monitoring program was implemented to provide greater understanding of the frequency of bird collision events with overhead power lines"*.

53 In its submission to the Board, DAHG has suggested that, *"It would be useful if a targeted monitoring program was implemented to provide greater understanding of the frequency of bird collision events with overhead power lines"*.

54 Moreover, DAHG states: *An Bord Pleanála may need to request some further information as to the methodology of the proposed monitoring (detailed in the EIS), in particular to ensure that the removal of fatalities by foxes, etc has been considered in any such methodology and what action will be taken by the applicant or the planning authority in the event of monitoring showing a negative impact on bird populations due to collisions."*

Applicant's Response

55 A standardised and systematic approach to line searches and monitoring effectiveness of the proposed mitigation will be undertaken. An outline method for confirmatory monitoring of mortality and flight activity in the vicinity of the proposed powerline is presented below. This method is informed by existing baseline survey methods and existing literature on the subject (APLIC, 2012; Prinsen et al, 2011).

(a) Mortality Surveys

56 Searches for bird carcasses are proposed along the powerline. It is proposed that carcass searches are focussed on high-risk sites – these are the locations where bird flight diverters are proposed to be installed. The proposed method must be adaptable however to any changes in distribution patterns noted during the course of flight activity and WeBS surveys (see next section).

57 The technical and practical issues associated with such surveys are discussed below and an outline method is proposed.

58 Variables in detecting bird mortality include factors such as search efficiency, scavenger rate, vegetation cover, and accessibility of terrain. Dedicated line searches and evaluation of mitigation measures should therefore, where practicable, include

experiments to correct for searcher detection bias and scavenger removal bias. Rates to correct for both biases can be established with experiments in which carcasses are laid out below and near the studied power line sections. If such corrections for bias are not possible, results from studies searching for bird carcasses under power lines should be considered as minimum estimates of mortality

- 59 The use of dogs in carcass searches can have advantages over humans (Paula et al, 2011²⁹; Matthews et al, 2013³⁰). At large sites, the high initial set-up costs for search dogs can therefore be offset by the increased number of surveys that can be conducted within a given time. However, care must be taken with the selection and training of the dogs and handlers to produce consistent results and as for humans, estimates of accuracy should be carried out.
- 60 The issue of access to sites may need consideration – not all sites may be accessible, and of those that are accessible it may not be appropriate to bring a dog into certain sites (such as where there is a risk of startling livestock or wildlife). Sites viewed from afar may have lower detection rates than sites that are walked. While sites that are walked by humans may have lower detection rates than sites where dogs are used.
- 61 The habitats present in the areas identified as having a high collision risk are mostly improved pasture. These habitats lend themselves to rapidly locating swan carcasses and other evidence of collision as the vegetation is short and topography relatively even.

(b) Outline Field Survey Method

- 62 AREA - Most collision victims are found within 50m of a power line, however larger search zones should be incorporated in the design to ensure all mortalities are captured and an area of at least 40-50m on both sides is recommended (Prinsen et al, 2011). The area within a 45 degree fall angle from the power line (from the outermost cable on either side) is suggested or a minimum of 50m either side (whichever is greater). Depending on where the powerline sits in relation to field boundaries this may involve parallel searches in adjacent landholdings.
- 63 SURVEYOR/ACCESS - Given the nature of the landscape in the study area (with common screening features such as hedgerows and drumlins) searches on foot are considered the best option, although some large swan carcasses may be visible from public roadways.
- 64 FREQUENCY - For large bird species fortnightly searches are recommended (Prinsen et al, 2011).
- 65 DATA RECORDED - When a carcass is detected the following information will be recorded:
- Location (including GPS coordinates) relative to the line/pylons.
 - Photograph of carcass in-situ.
 - Species, age and sex (may require bagging and removal of carcass).

²⁹ Paula, J; Costa Leal, M; Joao Silva, Maria; Mascarenhas, R; Costa, H and M. Mascarenhas (2011) Dogs as a tool to improve bird strike mortality estimates at wind farms. *Journal for Nature Conservation* 19 (2011) 202-208.

³⁰ Mathews, F., Swindells, M., Goodhead, R., August, T. A., Hardman, P., Linton, D. M. & Hosken, D. J. (2013) Effectiveness of search dogs compared with human observers in locating bat carcasses at wind-turbine sites: A blinded randomized trial. *Wildlife Society Bulletin*, 37: 34-40.

- Confirm if collision has caused the birds death or if it was due to electrocution when perching or another cause (shot, predated). If there are no obvious signs (e.g. broken bones/impact wounds) then an autopsy may be required.
- Details on habitats, vegetation and observations of bird flocks or other information.
- Categorise bird remains (see table below – note that categories i-iii are counted as collisions).

Category	Bird Remains
i	Intact: the carcass is completely intact, not badly decomposed, and showing little or no sign of having been fed upon by a predator or scavenger.
ii	Scavenged: carcass which is to some degree dismembered and shows signs of having been fed upon by a predator or scavenger (from minor scavenging to heavily scavenged but some tissue, bones, flesh and feathers present).
iii	Feather spot: consists of ten or more feathers, or two flight feathers (i.e. primaries, secondaries or tertials from the wing; or tail feathers) at one location.
iv	Feathers: for all other records of less than 10 feathers, other than single downy or body feathers, i.e. groups of between two and ten feathers, not more than one of which is a flight feather.

66 Results generated from the data collected will include:

- Number of casualties at each site
- Casualties per km of power line
- Casualties per km per day
- Casualties per km per year.

67 An analysis of morality relative to flight activity and numbers of bird mortalities at each site will also be carried out.

(c) Bird Distribution and Flight Activity Surveys

68 The second element of the confirmatory monitoring proposed are the flight activity monitoring surveys. These are in line with those flight activity surveys carried out for the pre-consent stage and will enable a comparison of bird distribution, abundance and flight activity at established monitoring locations pre-consent, during construction and post-construction. There will be two key elements – WeBS surveys and Vantage Point Surveys.

(d) WeBS Surveys

69 Surveys will be conducted of all potential wintering bird sites in the study area. These surveys will be used to determine whether there are any spatial or temporal shifts in bird abundance and distribution relative to baseline (pre-consent) data. The surveys will also determine whether additional sites require Vantage Point monitoring for flight activity based on any changes in the distribution of flocks of key species.

70 The survey approach followed as far as possible standard methodologies suitable for identifying key concentrations of wintering wildfowl (WeBS) detailed in Gilbert et al., (1998)³¹. It is proposed that a team of surveyors will drive the entire survey area on a given day each month, surveying known sites and identifying new sites. All sites will be scanned using binoculars and telescopes as appropriate, from vantage points on public roads. Potential suitable habitats close to these sites will also be checked, as will areas deemed suitable for Whooper Swans that were seen whilst driving between sites. Records will be taken of numbers of Whooper Swans, weather conditions and habitat type. Other species of conservation concern will also be noted if seen.

(e) Vantage Point Surveys

71 Dawn and dusk vantage point watches, based on SNH 2014³², will be conducted at established monitoring sites along the alignment in order to determine flight lines and bird behaviour in flight, in the vicinity of the powerline. The dawn and dusk period is when Whooper Swans are most likely to fly to/ from roost sites. Twenty vantage point survey locations have been identified for survey to date in the study area based on past observed flightlines and areas where Whooper Swans congregate. Vantage Points were selected based on identified or potential flight routes of Whooper Swan between forage and roost sites, in the vicinity of the proposed alignment. In addition less frequently used sites or possible sites were surveyed. It is proposed that confirmatory monitoring should continue at these twenty established locations, with potential for additional sites if data from WeBS surveys indicates this may be required.

72 The nature of bird movements over time can be dynamic and may lead to a requirement for additional mitigation in the form of flight diverters being proposed by the applicant in the future. In addition the results of any on-going research in the field will be reviewed and factored into the mitigation plan, for example advances in technology of deterrents. Any adjustments to the current mitigation plan will be consulted upon with NPWS.

12.3.1.5 Conservation Objectives

73 The DAHG has indicated that they are not clear as to what version of site specific conservation objectives for Dundalk Bay cSAC/ SPA were used in the preparation of the NIS.

Applicant's Response:

74 The site specific conservation objectives for Dundalk Bay cSAC and SPA are quoted in section 5.1.8 of the NIS. A footnote or reference to state the version number and date was omitted, although a footnote was included to reference the corresponding Conservation Objectives Supporting Document inclusive of date and version number (2011, Version 1). For clarity we can confirm that the detailed conservation objectives used in this assessment were Version 1.0 dated 19th July 2011.

12.3.1.6 Collision Data and Cumulative Impacts

75 The DAHG makes a number of observations in relation to collision data and cumulative impacts, as follows:

³¹ Gilbert G., Gibbons D.W., Evans J, (1998). *Bird Monitoring Methods: A manual of Techniques for Key UK Species*. RSPB, Sandy.

³² Scottish Natural Heritage (2014) *Recommended bird survey methods to inform impact assessment of onshore wind farms*.

Collision Data

76 (In the NIS and EIS) "There has been no attempt to put quantitative values on the number of fatalities that could occur as a result of the proposed development...."

77 "Data should be quantitative in order to establish whether this will give rise to a significant effect; no reference has been made to survey data and no indication has been given as to what number "few" is or what comprises a "large flock". Conclusions should be substantiated with and supported by scientific information and analysis.

Cumulative impacts

78 A number of overhead lines and windfarms were considered for cumulative impacts including the proposed Emlagh windfarm. Without an estimate of the cumulative number of fatalities that could occur, it is the department's view that the cumulative effect of fatalities due to bird collisions has not been assessed.

Applicant's Response:

79 To inform EirGrid's response a review was conducted of existing collision risk modelling data which is primarily for windfarm developments and includes one model for a 400 kV powerline development in Scotland as follows:

- Beaully Denny EIS. Annex 08 Bird Collision Mortality Assessments (collision risk assessment for 400 kV development).
- Masden E.A and Cook A.S.C.P (2016) Avian collision risk models for wind energy impact assessments Environmental Impact assessment Review 56, 43-49.
- Band, B. (2012). Collision Modelling Guidance, Available at: <http://www.bto.org/science/wetland-and-marine/soass/projects>. (Collision risk model for wind farm development).
- SNH. (2010). *Use of Avoidance Rates in the SNH Wind Farm Collision Risk Model*. Scottish Natural Heritage Information & Guidance Note. (Collision risk model for wind farm development).
- SNH. (2013). *Avoidance Rates For Wintering Species of Geese in Scotland at Onshore Wind Farms*. Scottish Natural Heritage Information & Guidance Note.

80 No model has been developed to date to assess collision risk to birds from powerlines in an Irish context.

81 It is important to note that there are variables which limit the quality of results that can be determined from collision risk modelling. Collision risk models should only be considered as one tool in informing the overall impact assessment. It is important to note that collision values given in this Response Report are estimates only. The expected Whooper Swan responses to powerlines are set out in section 6.5.3.3.1.1 of Volume 3D of the EIS which details evidence that illustrates that Whooper Swans continue to use areas in the vicinity of existing transmission line infrastructure without measurable impacts on local populations.

82 Variables which may influence the actual number of collision impacts and hence accuracy of these models include:

- Weather conditions such as for/mist may increase collision risk; and

- The vantage point method used to collect data including flight heights, direction, frequency based survey period requires an adequate view shed to be effective. Most sites in County Meath had limitations in this regard with hedgerows and other vegetation blocking longer range visibility.

- 83 This collision risk assessment approach was preceded with a detailed review of all survey data accumulated to date, so as to quantify parameters required to inform a collision rate assessment at identified collision risk sites along the proposed alignment in County Meath. Sufficient flight data was gathered from the eight years of survey data for key locations in County Meath to provide an estimate of collision rates per year.
- 84 Very few flightlines were recorded at sites in counties Monaghan and Cavan. This is despite extensive and regular dawn and dusk flightline surveys at all sites where Whooper Swans were observed in the vicinity of the proposed alignment. The only location where flightlines were recorded flying across the proposed alignment was at Ballintra. All flights observed³³ at this location were < 10m high and likely below the height of the conductors. The model can only be employed where data is sufficient to inform the model and therefore in the absence of such data, collision risk models cannot be determined for the County Monaghan area. This supports the assessment of a low collision impact for Whooper Swan detailed in section 6.5.3.4 of Volume 3C in the EIS.
- 85 In County Meath, a number of sites were identified in the EIS where regular or irregular flightlines were recorded.
- 86 Regular flightlines are defined as (a) flightlines recorded in at least 2 years of the 8 year survey (b) flightlines recorded between roost and foraging areas on a typically daily basis (dawn and dusk flight), when Whooper Swan occur in the area and; (c) at least 10% of observed flights crossed the proposed alignment.
- 87 Irregular flightlines are defined as (a) Whooper Swan were observed at sites within 2km of the proposed alignment or at sites clusters of sites (lakes) bisected by the alignment and; (b) no flightlines were observed despite regular surveys and (c) changes in numbers at sites indicated probable (unobserved) flightlines. Irregular flightlines locations also included those areas where (a) Whooper Swan were observed in 2 or less years of the survey period close to the alignment (within 2km) and (b) less than 10% of flights crossed the proposed alignment (if flightlines were observed).
- 88 The quantitative data collected at all sites, included numbers of Whooper Swan recorded flying over the alignment, proportion of flights recorded crossing the alignment and flight heights; allowed an assessment of potential collision rates of Whooper Swans at specific sites detailed where flights crossed the proposed alignment.
- 89 This collision rate assessment follows the empirical method adopted and tested in the Beaully Denny 400kV overhead line development in Scotland³⁴.
- 90 Collision Rate (C.R) per year at specific sites in County Meath were estimated based on the following worked example for the section of the proposed alignment which bisects the Whooper Swan flightline between Tara mines Tailings Ponds (roost site) and the River Blackwater valley farmland (foraging areas) to the west of here:

³³ Ballintra was surveyed at least 151 times in total between 2007 and 2015 (all survey methods including counts)

³⁴ Beaully Denny EIS. Annex 08 Bird Collision Mortality Assessments (collision risk assessment for 400 kV development).

Step 1: Estimate proportion of flights likely to be at risk flight height.

All flights observed were determined to potentially be at risk as the proposed development would likely alter flight heights so this is taken as **100%**. This is a highly conservative approach and represents a worst case scenario, as many flights would not in reality be in the collision risk height zone.

Step 2: Estimate flight rate i.e. the proportion of all flights observed which crossed the alignment at specific location.

For the River Blackwater this value was estimated as **0.25** of recorded flights crossed the alignment.

Step 3. Estimate flight activity i.e. typical nos. of flights/ day across alignment

2 (morning and evening flights) are typical in Co Meath.

Step 4: Estimate the residence period that Whooper Swans would be in the specific area based on observations from field surveys.

For Tara Mines this was estimated as typically **120** days.

Step 5: Estimate the numbers of Whooper Swan which were recorded flying over the alignment.

A range value is provided based on minimum and maximum numbers observed in given years.

At Tara mines this was 9 (2007/2008) – 145 (2008/2009) birds.

- 91 Based on the above parameters the **Number flights / year** across the proposed alignment for the lowest number of Whooper Swan recorded (9) is estimated as follows

$$0.25 \text{ (flight rate)} \times 2 \text{ (nos flights/ day)} \times 120 \text{ (days)} \times 9 \text{ (minimum number Whooper Swan observed)} = 540$$

- 92 Based on the above parameters the **Number flights/ year** across the proposed alignment for the highest number of Whooper Swan recorded (145) is estimated as follows

$$0.25 \text{ (flight rate)} \times 2 \text{ (nos flights/ day)} \times 120 \text{ (days)} \times 145 \text{ (minimum number Whooper Swan observed)} = 8700$$

- 93 To estimate **Collision Rates (C.R)** the number flights/ year value is multiplied by a collision probability value estimated from observational studies. A value of **(0.053% or 0.00053)**³⁵ (Meyer, J.R., 1978) is taken which relates to a similar species (Pink-footed Goose) and was used for the Beaully Denny 400 kV project in Scotland which is relatively similar to the proposed development.

³⁵ Meyer, J.R. (1978). *Effects of Transmission Lines on Bird Flight Behaviour and Collision Mortality. Prepared for Bonneville Power Administration, Engineering and Construction Division, Portland, Oregon.*

94 Estimated Collision Rates (C.R) for the Tara Mines flightline is determined as follows;

C.R (lowest count = 9) = $540 \times 0.00053 = 0.28$ Whooper Swan collisions

C.R (highest count = 145) = $8700 \times 0.00053 = 4.6$ Whooper Swan collisions

95 In summary, the range of collisions which might be expected at the River Blackwater crossing of the proposed alignment (which bisects a regular flight line between Tara mines tailings ponds and lands along the River Blackwater valley) would range between **0.28 and 4.6** Whooper Swans in a given year.

Cumulative impacts are estimated / year by adding this C.R value for the project with the estimated C.R value recorded specifically for the Emlagh windfarm which equals 0.97 Whooper Swan. Therefore for the above example the cumulative collision rate would equal between **1.25 and 5.57**. Table 12.2 details the estimated collision rate range in a given year for the project alone and also cumulatively with Emlagh windfarm. Also detailed is a qualitative impact appraisal which supports a lower impact generally than that detailed in the EIS.

Table 12.1: Information used to inform estimated collision rates from the project alone and cumulatively with Emlagh Windfarm

Site Name and Tower locations where flightline observed across alignment	Minimum Numbers of days when dawn/ dusk and day vantage point surveys conducted	Number of Whooper Swan Flightlines observed in this area	Number of Whooper Swan flight lines observed across proposed alignment	Range of Whooper Swans counts recorded across the alignment over the 8 years of survey (2007 – 2015)	Regular Flightline Confirmed	Collision Rates Whooper Swan ³⁶ / year from project. Summary appraisal of potential project impacts alone to local ³⁷ populations of Whooper Swans ³⁸ (in the absence of mitigation)	Estimate of Whooper Swan collision rates cumulatively with Emlagh windfarm ^{39,40} to local populations of Whooper Swans (in the absence of mitigation)	Mitigation - Line marking flight diverters to reduce impact	Mitigation proposed is suitable for other species as detailed
River Boyne	20	0	0	0	No	No appreciable risk of collisions. Negligible impacts	None No cumulative impacts	Yes, Proposed in EIS	Cormorant, Little Egret, Grey Heron
Cloony Lough area	25	3	1	14 - 55	No	Worst case scenario collision range/ year = 0 ⁴¹ to 0.04 Negligible/ Low impacts	0.97 – 1.01 This location is the closest to Emlagh windfarm. Low/ Moderate cumulative	Yes Proposed in EIS	

³⁶ Based on range of nos. recorded in specific areas

³⁷ Local population determined based on 253 surveys in total between 2007/2008 and 2014 and 2015. Range of yearly average counts based on maximum counts recorded each month = 65 (2013/ 2014 surveys) to

³⁸ Worst case overall impacts are considered imperceptible to the Whooper Swan national population and low to the regional (Co Meath) population – see below Table 12.2

³⁹ 0.97 Whooper Swan collisions/ year estimated in Emlagh Windfarm EIS

⁴⁰ Cloony Lough is the only location near Emlagh windfarm where flightlines were observed relative to the proposed alignment. Therefore only this location is considered for cumulative impacts. Total cumulative impact collision rates consider the Emlagh windfarm collision rates also

⁴¹ Whooper Swan do not use the Cloony Lough area in some years therefore 0 collisions expected in some years

Site Name and Tower locations where flightline observed across alignment	Minimum Numbers of days when dawn/dusk and day vantage point surveys conducted	Number of Whooper Swan Flightlines observed in this area	Number of Whooper Swan flight lines observed across proposed alignment	Range of Whooper Swans counts recorded across the alignment over the 8 years of survey (2007 – 2015)	Regular Flightline Confirmed	Collision Rates Whooper Swan ³⁶ / year from project. Summary appraisal of potential project impacts alone to local ³⁷ populations of Whooper Swans ³⁸ (in the absence of mitigation)	Estimate of Whooper Swan collision rates cumulatively with Emlagh windfarm ³⁹⁴⁰ to local populations of Whooper Swans (in the absence of mitigation)	Mitigation - Line marking flight diverters to reduce impact	. Mitigation proposed is suitable for other species as detailed
							Impacts		
Cruicetown / Whitewood Lough	60	15	11	17 - 52	Yes	Worst case scenario collision range/ year = 0.4 ⁴² to 1.2 Low / Moderate impacts	0.4 to 1.2 Low/ Moderate cumulative impacts	Yes Proposed in EIS	Mute Swan
Tara Mines	62	22	16	9 -145	Yes -	Worst Case Scenario range / year = 0.3 ⁴³ to 4.6 Moderate impacts (local level)	Worst case scenario = 0.3 to 4.6 Moderate cumulative impacts	Yes Proposed in EIS	Cormorant Mute swan
Drakerath Area	12	0		0	No	0 Negligible impacts	0 None additional from Emlagh windfarm	No	

⁴² Whooper Swan do use Whitewood Lough/ Cruicetown every year

⁴³ Whooper Swan use Tara Mines and the Blackwater valley every year

Site Name and Tower locations where flightline observed across alignment	Minimum Numbers of days when dawn/dusk and day vantage point surveys conducted	Number of Whooper Swan Flightlines observed in this area	Number of Whooper Swan flight lines observed across proposed alignment	Range of Whooper Swans counts recorded across the alignment over the 8 years of survey (2007 – 2015)	Regular Flightline Confirmed	Collision Rates Whooper Swan ³⁶ / year from project. Summary appraisal of potential project impacts alone to local ³⁷ populations of Whooper Swans ³⁸ (in the absence of mitigation)	Estimate of Whooper Swan collision rates cumulatively with Emlagh windfarm ³⁹⁴⁰ to local populations of Whooper Swans (in the absence of mitigation)	Mitigation - Line marking flight diverters to reduce impact	Mitigation proposed is suitable for other species as detailed
Wilkinstown and Yellow river	24	6	0	0	No	0 Negligible impacts	0 None additional from Emlagh windfarm	Yes Proposed in EIS	None
Oristown/ Stone Cross to Tara Mines	3	3	2	7 - 23	Irregular	Worst case scenario collision range/ year ⁴⁴ = 0 – 0.48 Negligible/ Low impacts	Flight avoids Emlagh No cumulative impacts	Recommendations following 2014/ 2015 winter bird survey is that line marking be extended to include this area	None

⁴⁴ This site was only recorded in winter 2014/ 2015. This assessment is based on 1 year only as none were recorded during previous surveys

Site Name and Tower locations where flightline observed across alignment	Minimum Numbers of days when dawn/dusk and day vantage point surveys conducted	Number of Whooper Swan Flightlines observed in this area	Number of Whooper Swan flight lines observed across proposed alignment	Range of Whooper Swans counts recorded across the alignment over the 8 years of survey (2007 – 2015)	Regular Flightline Confirmed	Collision Rates Whooper Swan ³⁶ / year from project. Summary appraisal of potential project impacts alone to local ³⁷ populations of Whooper Swans ³⁸ (in the absence of mitigation)	Estimate of Whooper Swan collision rates cumulatively with Emlagh windfarm ^{39,40} to local populations of Whooper Swans (in the absence of mitigation)	Mitigation - Line marking flight diverters to reduce impact	. Mitigation proposed is suitable for other species as detailed
Breaky Lough	24	12	0	0	No	0 Imperceptible impacts	0	Line marking not warranted for section closest to Breaky Lough	0
TOTAL COLLISION RATE ESTIMATE/ YEAR						0.7 to 6.68	1.7 – 7.68	[0.17–0.768] ⁴⁵	

⁴⁵ A 90% collision rate reduction with flight diverters is detailed. As with all values given in relation to collision risk, the number is an estimate based on scenarios detailed in certain studies regarding line marking effectiveness..

- 96 Despite extensive surveys of the wider study area including aerial survey and drive round surveys, no other risk areas were identified over the course of eight years. Impacts to Whooper Swan in County Cavan and Monaghan are detailed in Chapter 6 of Volume 3C of the EIS.
- 97 The quantitative appraisal (presented above) and its significance regarding the impacts detailed in the EIS and NIS are summarised as follows.

Project Impacts Alone (i.e., without mitigation)

Summary Data

- 98 The potential Whooper Swan collision impacts are based on the estimated collision rate values detailed in Table 12.2 above which are based on 8 years of data. These potential impacts are estimated without the inclusion of mitigation (flight diverters). Flight diverters would be expected to significantly reduce or eliminate potential collision impacts.
- 99 A worst case scenario, without mitigation, arising from the collision model is that based on the 8 years of data between 0.7 and 6.68 Whooper Swans could collide with the proposed alignment/ year in County Meath.
- 100 A worst case scenario, without mitigation, arising from the collision model is that between 1.7 and 7.68 Whooper Swans could collide with the proposed alignment/ year cumulatively with Emlagh windfarm in County Meath.
- 101 Flightlines in Counties Cavan and in Monaghan were too infrequent to estimate collision numbers.

1. National Population Impacts

- 102 It is estimated that between 0.02% (1.7) and 0.07% (7.68) of the Irelands Whooper Swan population 10,365, Boland 2010⁴⁶ could collide with the proposed interconnector and Emlagh windfarm in County Meath in a given year, in the absence of mitigation measures.
- 103 Based on this collision rate; potential impacts alone and cumulatively with Emlagh windfarm, to the National Whooper Swan population, are considered imperceptible and not significant. Recent national surveys back this assessment in that evidence recorded indicates that Whooper Swan populations are at favourable conservation status. For example relatively high recruitment rates were observed in Boland et al., 2010 (17.5% of populations being juveniles). In addition populations in Ireland increased between 2000 and 2005 by 11% (Crowe *et al.* 2005)⁴⁷ and by 6% between 2005 and 2010 (Boland *et al.* 2010).

2. County/ Local Population Impacts

- 104 It is estimated that between 0.4% (1.7) and 1.8% (7.68) of the County Meath (count = 416) population (Boland 2010) could potentially collide with the proposed interconnector and Emlagh windfarm in Co Meath in a given year, without mitigation.
- 105 Impacts to the County Meath Whooper Swan population (alone and cumulatively with Emlagh windfarm) are considered Moderate and potentially significant. However, this

⁴⁶ Boland H, McElwaine J, Henderson G, Hall C, Walsh A & Crowe O (2010). Whooper *Cygnus cygnus* and Bewick's *C. columbianus bewickii* Swans in Ireland: results of the International Swan Census, January 2010. *Irish Birds* 9: 1-10 (2010)

⁴⁷ Crowe (2005) Irelands Wetlands and Their Waterbirds: Status and Distribution. Birdwatch Ireland.

potential impact would unlikely lead to an overall decline⁴⁸ in the County Meath population. This moderate collision impact is identified in the operational potential impacts section of Chapter 6 of Volume 3D of the EIS

106 In all cases where irregular and regular flightlines were determined, mitigation in the form of line marking has been proposed which, based on available scientific information will eliminate or reduce the possible collision rates detailed.

107 It is important to highlight that this collision rate assessment is an estimate only. It facilitates the overall collision impact appraisal. The collision rate determined is just one of many parameters considered in evaluating possible bird collision impacts from the project alone and cumulatively with Emlagh windfarm. Collision estimates detailed cannot be treated as actual impacts that will arise. It is expected that based on observed Whooper Swan interactions with overhead lines, combined with the species favourable conservation status, that these collision rates are possible **worst case scenarios**. In addition, those collision rates have been presented without taking account of the effectiveness of the proposed mitigation measures.

12.3.1.7 Tree and Hedgerow Trimming

108 **DAHG observation:** This observation highlights that killing or disturbing birds and their eggs and nests can only be done under license from National Parks and Wildlife Department.

Applicant's Response:

109 It is proposed to generally avoid hedgerow cutting during the bird breeding season March 1st – August 31st. A preconstruction confirmatory survey will be conducted for birds where any woody vegetation clearance (possible nesting habitat) is proposed during the bird breeding season. A derogation licence will be sought from NPWS if a risk to breeding bird sites is identified at the site clearance stage.

12.3.1.8 Water Quality

110 **DAHG observation:** An Bord Pleanála should ensure the outline Construction Environmental Management Plan (CEMP) contains enough detail to allow a complete, precise and definitive appropriate assessment and ensure protection of water quality.

Applicant's Response:

111 Proposed measures detailed by the Inland Fisheries Ireland (IFI) are in accordance with the EIS mitigation measures and Outline Construction Environmental Management Plan (OCEMP), detailed in Appendix 7.1 of Volume 3B of the EIS. No instream works will be carried out without the written approval of IFI. Fording of streams will not be permitted. IFI will be given sufficient notice before pre-approved works commence. All construction works will be completed in accordance with the outline CEMP which ensures Best Practice throughout the construction period.

12.3.1.9 Position of Pylons and Field Survey Work

⁴⁸ A model, produced by SNH (2012) predicted that 4% of the population of Whooper Swan has to be removed annually to cause a population decline, which would be a significant adverse impact. This was based on the same breeding population as the birds found in Ireland.

- 112 DAHG notes that EirGrid has taken on board previous concerns of the DAHG regarding placement of towers on hedgerows
- 113 DAHG also noted that EirGrid have not undertaken ecological (field) surveys of all lands that may be affected by the proposed development. DAHG questions An Bord Pleanála as to how significant ecological issues will be handled post consent which could have affected the Boards conclusions.
- 114 DAHG draws attention to Circulars of 2007 (PD 2/07 and NPWS 1/07) and *“under no circumstances should authorities use compliance conditions to: complete an inadequate EIS; ensure the adequacy of information supplied by a developer in an application for development having a potential impact on a site of international importance for nature conservation, i.e. SAC or SPA or; in either of the above cases to request the development of appropriate mitigation measure.....”*.
- 115 DAHG makes reference to further information requested in accordance with article 33 of the Planning and Development Regulations, 2001.

Applicant's Response:

- 116 This limited access to lands is acknowledged as a constraint in preparing the ecology section of the EIS (see Volume 3C, Section 6.1.5 and Volume 3D, Section 6.1.5).
- 117 The requirement of Ecological impact assessment (for EIA) is to focus on the investigation of likely significant effects. This requirement informed the rationale used to select key ecological areas and species for detailed study (IEEM 2006⁴⁹, NRA 2009⁵⁰). It was readily possible to confirm from the surveys conducted that the vast majority of the study area was not of significant value ecologically, it being managed farmland. Any habitat of ecological value where a tower is proposed to be located was field surveyed and confirmed not to be of high ecological value and proposed access routes will use existing field access points so as to avoid disturbance to hedgerows and associated fauna.
- 118 A carefully considered approach to the ecological appraisal was developed which is described in section 6.1.5 of Volumes 3C and 3D of the EIS. In summary, to establish the significant characteristics of the existing ecological environment the following was undertaken:
- Use of traditional and modern desktop appraisal techniques (such as use of recent aerial photography and LiDAR, extensive range of existing GIS datasets) to identify potentially sensitive ecological features, refer to Section 6.2.3 (Volume 3C & 3D) for detailed desktop methods used)
 - Multidisciplinary field surveys where access to lands was permitted and visual surveys from vantage points along the public road infrastructure (see Section 6.2.4 for details of the field surveys undertaken).
 - In addition a unique precautionary avoidance approach was adopted in the design of the proposed development. In those situations where towers are required on lands that were not subject to field survey, tower locations were selected based on the presence of habitats of low ecological value (e.g. improved agricultural grassland),

⁴⁹ Institute of Ecology and Environmental Management (2006). GUIDELINES FORECOLOGICAL IMPACT ASSESSMENTIN THEUNITED KINGDOM

⁵⁰ NRA (2009b). Guidelines for Assessment of Ecological Impacts of National Road Schemes. (Revision 2, National Roads Authority);

thereby minimising the potential for impacts of significance associated with tower construction.

- 119 Despite having limited access to lands to undertake ecological field surveys, it is the view of EirGrid's project team that the ecological appraisal undertaken and presented in the application documentation is in accordance with the requirements of a proper appraisal. It is also important to note that the receiving environment is a heavily modified and managed landscape. Semi-natural habitats of high ecological value are scarce throughout the study area and occur as discrete units that lend themselves to avoidance. The level of baseline appraisal is considered proportionate to the resilience and low ecological sensitivity of the receiving environment.
- 120 In areas of managed farmland, the combination of remote sensing using aerial imagery and other GIS datasets supplemented by visual surveys provides an adequate assessment of baseline ecology, particularly considering the diffuse nature of the proposed development. It is standard practice that such techniques are used in habitat appraisal as noted in IEEM (2006)⁵¹.
- 121 Detailed precautionary mitigation, as described within the EIS, will be implemented immediately prior to and during the course of construction commencing, so as to minimise potential impacts. It is recognised that, even in the event that full access to land had been granted from the outset of the project, such confirmatory surveys would be required.

12.3.2 Inland Fisheries Ireland (SI-2015-0212)

- 122 Inland Fisheries Ireland (IFI) highlights that the proposed development has the potential to impact fisheries waters and specific catchments including River Boyne and River Blackwater cSAC.
- 123 It notes that the outline CEMP has an emphasis on protecting water courses within catchments of European sites. IFI highlights that this protection should include all watercourses irrespective of designation.
- 124 The IFI submission outlines the requirement for consultation with IFI for different elements of the potential construction works which may give rise to impacts to fisheries, that it is the responsibility of the developer and contractors to ensure that works will not give rise to deleterious or polluting matter to waters. Relevant environmental legislation should be considered as appropriate.

Applicant's Response:

- 125 It is considered that the outline CEMP is comprehensive and contains detailed measures to ensure protection of water quality and fisheries in all watercourses, irrespective of designation. Further consultation will be conducted with IFI regarding any site-specific issues at the construction phase, in line with the works and mitigation measures set out in the application documentation.

⁵¹ Institute of Ecology and Environmental Management (2006). GUIDELINES FOR ECOLOGICAL IMPACT ASSESSMENT IN THE UNITED KINGDOM

12.3.3 Cavan County Council (SI-2015-0214)

126 Heritage Areas (NHAs) are not applicable to County Cavan and a NIS was submitted with the planning application.

127 It is highlighted that the proposed alignment will represent a collision danger to some bird species and mitigation should be proposed in consultation with the National Parks and Wildlife Service.

Applicant's Response:

128 As set out in detail in the application documentation and this Response Report, the applicant has proposed marking some segments of the earth wire with flight diverters as mitigation to minimise potential collision impacts to some bird species. The effectiveness of this mitigation will be confirmed with confirmatory monitoring and consultation will be conducted with NPWS during the monitoring phase of the project.

12.3.4 Monaghan County Council (MCC) (SI-2015-0215)

12.3.4.1 Impact upon Trees and Hedgerows

12.3.4.2 Impact upon Trees and Hedgerows

129 The submission sets out *"A clearance corridor of 74 metres is mentioned and no details in the EIS are provided for such a wide clearance area"*.

130 *"Specific information on impacts to hedgerows to facilitate 4m wide access tracks is required, particularly regarding cumulative impacts. This submission highlights that the following towers will necessitate hedgerow removal for access tracks. 103, 104, 106, 109, 111, 114, 115, 118-120, 123, 137-139, 145, 148, 149, 151, 155, 159, 164, 166, 172, 185, 191, 196, 197, 200-203, 205, 207, 210 and 211"*.

Applicant's Response:

131 The 74 metre corridor is specifically only required in areas of plantation woodland i.e. not at hedgerows.

132 The corridor of 74 m for 400 kV lines is based upon what is considered to be the highest commercial timber in Ireland within the ESB/IFA agreement (26 m).

133 It is not proposed to remove hedgerows along access routes to works sites. Hedgerow trimming may be required in some cases to allow access along some of the access lanes and the use of mitigation identified including Ecological Clerk of Works and confirmatory preconstruction surveys will ensure significant adverse impacts are avoided. The nature/limitations of the access route will inform the types of machinery used to access works areas. For example narrow access roads (<4m) will be trimmed of vegetation (hedgerows retained) and smaller dumpers (<3m wide) will be used to access works areas. As detailed in the EIS; sites of high ecological value will be avoided.

134 It is proposed that the Ecological Clerk of Works will also liaise with the site archaeologist

12.3.4.3 Wetland/ Fens/ Bogs

135 Monaghan County Council considers Bocks Lough woodland (0.2HA) impacted east of Tower 175 should be surveyed (rare protected species).

136 Monaghan County Council considers Hydrological impacts should be considered for some wetland sites identified including Raferagh Fen, Corlea Bog and Bocks Lough.

Applicant's Response:

Raferagh Fen (hydrological Impacts)

137 Towers 197 and 198 are the nearest towers to Raferagh Fen/Raferagh Lough. Raferagh Lough is approximately 100m east of Tower 198. Based on topography, surface water runoff from Tower 197 and 198 is towards the wetland and lough. Sediment control measures will be implemented on the upslope and downslope of both towers. Sediment control measures will be implemented in accordance with Section 8.6, Chapter 8, Volume 3C of the EIS and the CEMP Appendix 7.1, Volume 3B Appendices.

138 Based on a review of the elevations, Tower 197 is located at approximately 172.8 m OD approximately 15 m above the level of Raferagh Fen. Surface water runoff at the tower bases will not be altered as a result of construction at Tower 197. Tower 198 is located at approximately 171.9 mOD approximately 14 m above the level of Raferagh Fen. Surface water runoff will not be altered as a result of construction at Tower 198.

139 Mitigation measures will be in accordance with the Section 8.6, Chapter 8, Volume 3C of the EIS and the outline CEMP Appendix 7.1, Volume 3B Appendices. There will be no significant residual impacts on Raferagh Lough during the construction or operation phase.

Corlea Bog

140 Towers 206 and 207 are the nearest towers to Corlea Bog. Corlea Bog is approximately 130m south of Tower 206 and approximately 30 northeast of Tower 207. Based on topography, surface water runoff from Tower 206 is towards the wetland area. Surface water runoff on Tower 207 is towards a drainage ditch which eventually flows into the wetland area. Sediment control measures will be implemented on the upslope and downslope of both towers.

141 Based on a review of the elevations, Tower 206 is located at approximately 158.2 m OD approximately 9m above the level of Corlea Bog. Surface water runoff will not be altered as a result of construction at Tower 206. Tower 207 is located at approximately 151.7 mOD approximately 2.7m above the level of Corlea Bog, on the opposite side of a local road. Surface water runoff will not be altered as a result of construction at Tower 207

142 Mitigation measures will be in accordance with the Section 8.6, Chapter 8, Volume 3C of the EIS and the outline CEMP Appendix 7.1, Volume 3B Appendices. There will be no significant residual impacts on Corlea Bog during the construction or operation phase.

Bocks Lough

143 The woodland identified in this submission is isolated from Bocks Lough and associated habitat as shown in Figure 6.2.10 being located ca. 100m west of the woodland boundary of Bocks Lough. Grassland habitat occurs between the woodland and the wetland at Bocks Lake therefore the limited tree felling that may be required at the woodland site, will not impact on Bocks Lough.

- 144 Woodland at Bocks Lough was visually assessed. No evidence of rare or protected flora and fauna species in the area was recorded and based on the habitat quality it was considered that rare or protected flora at this location is highly unlikely. The woodland site has been evaluated as being of local importance (lower value). A survey of a larger stand of woodland at Bocks Lough undertaken as part of the NSNW (Perrin et al. 2008) did not record any rare or protected species. Impacts likely at this location are relatively limited and will consist of localised tree lopping. This will not lead to significant disturbance to the ground and shrub storey and dead wood (cut trees) will have ecological value.
- 145 The assessment of impacts presented in the EIS assumes the worst case scenario of a 74m wide non-wooded corridor and concludes that a minor negatively impact is likely to occur due to the loss of 0.2ha. In reality, the felling that will be required will not cause loss of habitat as it is likely to only require trimming of some individual larger trees. The proposed mitigation means tree lopping will be conducted in a manner which minimises disturbance and will be monitored by an ecological clerk of works.
- 146 Towers 175 and 176 are the nearest towers to Bocks Lough. Bocks Lough is approximately 210m east of Tower 175 and Tower 176. Based on topography, surface water runoff from tower 175 is towards the local road which eventually drains to Bocks Lough. Sediment control measures will be implemented on the upslope and downslope of both towers.
- 147 Based on a review of the elevations, Tower 175 is located at approximately 132.3 m OD approximately 20m above the level of Bocks Lough. Surface water runoff will not be altered as a result of construction at Tower 175. Tower 176 is located at approximately 119.1 mOD approximately 5m above the level of Bocks Lough, on the opposite side of a large drumlin.
- 148 Mitigation measures will be in accordance with the Section 8.6, Chapter 8, Volume 3C of the EIS and outline CEMP Appendix 7.1, Volume 3B Appendices. There will be no significant residual impacts on Bocks Lough during the construction or operation phase.

12.3.4.4 Whooper Swan

- 149 Monaghan County Council considers that the colour of the proposed swan flight diverters should be reconsidered so as to maximise visibility.
- 150 Monaghan County Council recommends that additional areas of the line be marked with flight diverters even where there has been limited Swan traffic / flight lines noted in the past few years. MCC notes Whooper Swans were not tagged during survey.
- 151 Post construction monitoring should be undertaken for at least 5 years.

Applicant's Response:

- 152 Grey coloured flight diverters are proposed as they will minimise potential additional visual impact impacts whilst increasing the visibility of the earth wire to flying birds. Grey coloured swan flight diverters have been shown in studies to reduce bird collisions. This issue is also addressed in the response to the DAHG submission herein (**Section 11.3.1**)
- 153 The Whooper Swan studies identified line marking along the alignment where flightlines were recorded and where the alignment bisects lakes where Whooper Swan/ wildfowl occur.

- 154 A number of potential locations were considered for marking the alignment with flight diverters. These locations were where the proposed alignment is located within 1km of lakes and potential waterfowl/ Whooper Swan habitat. These areas were frequently surveyed and the following was confirmed;
- Lake and potential waterfowl habitat in Co. Monaghan within 1km of the proposed alignment which are additional to sites specified in the EIS include;
 1. White Lough, Black Lough, Lough Nahinch and Tassan Lough
 2. Cremartin Lough, Drumgristen Lough, Lismagunshin Lough, Ghost Lough, Coogans Lough
 3. Bocks Lough
 4. Corawaddy and Muff
 - No Whooper Swan were recorded at these locations or observations were very infrequent e.g. one Whooper Swan record in 8 years of survey.
 - Flightlines observed at any of these sites were recorded away from the alignment location.
- 155 Despite no or very few records, these areas are possible habitat for Whooper Swan and are used by other waterfowl in very low numbers.
- 156 Line markings is considered not merited at these locations based on the 8 years of survey, but as a precautionary measure post construction monitoring will be undertaken for at least 5 years to confirm this.

12.3.4.5 Inadequate Survey of Bats

- 157 It was submitted by that an inadequate bat survey was conducted.

Applicant's Response:

- 158 Potential bat roosts such as old buildings, churches, caves, houses and other buildings will be avoided by the development and bat surveys have been carried out on the project to date, as explained in chapter 6 of Volumes 3C & 3D of the EIS. Despite bat surveys being carried out to date, the difficulty in detecting bat roosts in trees and the transient nature of bats' use of tree roosts means that detailed mitigation, as described within the EIS, will need to be implemented during the course of construction to ensure as far as possible that no bats are harmed. It is recognised that even in the event that full access to land was granted from the outset of the project, searches for bat roosts and described mitigation measures in relation to tree cutting would still be required prior to construction.

12.3.5 Meath County Council (SI-2015-0216)

12.3.5.1 Wetlands

- 159 Meath County Council states that a County Meath Wetland Survey has been undertaken and highlights a number of Towers and access routes potentially in wetlands including; 268, 269, 287, 290, 292 and 297.

160 It also advises that GIS mapping for the Meath wetland survey should be overlain and confirm if field surveys at any locations are possibly affected by the proposed development.

Applicant's Response:

161 Wetlands identified in the County Meath wetlands and coastal habitats survey (August 2010)⁵² and additional sites identified by Foss (2013) were reviewed on Wetland Surveys Ireland Mapviewer⁵³. All identified wetlands are avoided by the proposed development

162 Habitats are detailed in Volume 3D Figures 6.2.1 to 6.2.21 inclusive. These maps include those highlighted by MCC i.e. towers 268, 269, 287, 290, 292 and 297 and associated access routes. None of the tower locations are located in wetlands of conservation significance and all are located in managed farmland. These areas may have had former wetlands but they have since been reclaimed for farming purposes.

12.3.5.2 Hedgerows/ Woodlands

163 *Compensatory habitat should be provided at suitable locations*

Applicant's Response:

164 Land under towers in particular at arable fields will be able to develop as "wildlife habitat" in agreement with the landowner.

165 Mitigation measures including replanting hedgerows are detailed in the EIS as follows;

"Post construction, a wooden fence will be installed around the tower base to prevent livestock access and replanting carried out with low growing woody species of local provenance including Blackthorn, Hawthorn and Hazel. This will allow re-establishment of the hedgerow in the gap where the tower is located. It is expected that the hedgerows would be sufficiently robust within five years following construction that fencing could be removed".

12.3.5.3 Whooper Swans and other birds

166 *((Collision) Impacts must be considered alone and in combination with Emlagh windfarm. Further analysis should be sought to establish cumulative impacts on local and national Whooper Swan populations.*

Applicant's Response:

167 Further collision risk analysis/ review of data has been conducted. Please refer above to DAHG submission response item 12.3.1.6 - Collision Data and Cumulative Impacts.

⁵² COUNTY MEATH WETLANDS AND COASTAL HABITATS SURVEY (August 2010). Meath County Council.

⁵³ <http://www.wetlandsurveysireland.com/wetlands/map-of-irish-wetlands--/map-of-irish-wetlands---map/index.html>

12.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

12.4.1 Elected Members of Meath County Council (SI-2015-0002)

168 The submission includes the following bullet points of relevance to ecology:

- The councillors questioned if the development would have a detrimental impact on Special Areas of Conservation and heritage sites such as Bective Abbey.
- The proposed development is planned to cross both the Boyne and Blackwater Rivers, both designated as cSAC areas, with pylons planned for construction as close to 6m from the Boyne. There will be significant localised effects at the crossing points of the Boyne and Blackwater Rivers, as these locations are quite open and sensitive river valley landscapes, which are proposed to be oversailed by the transmission line.
- The NSI is planned to be established close to the nesting area and flight path of whooper swans. Whooper swans are noted as a species that are present in Meath during winter in numbers that regularly exceed nationally significant levels (greater than 150 birds). Overall a number of important whooper swan sites have been identified relatively close to the NSI proposed line. These include: Tara Mines Tailings Ponds (roost site), River Blackwater Valley (various foraging sites), Headford estate (roost site), Yellow river (foraging site), Cloony Lough (area), Cruicetown (area) and Balrath Estate (foraging and roost site).

Applicant's Response:

169 There will be no direct or indirect impacts on the River Boyne and River Blackwater cSAC. Tower construction activities will be located away from all watercourses and outside of the cSAC boundaries, and there will be no in-stream works. Stringent best-practice pollution control measures will be implemented to prevent any pollutants reaching the cSAC or any connecting watercourse. The effective full implementation of these measures will be monitored by an Ecological Clerk of Works.

170 Foraging and roosting sites for Whooper Swan are dispersed throughout Ireland including the Counties of Meath, Cavan and Monaghan. To clarify it should be noted that no Whooper Swan nest (i.e. breed) in the area. Eight years of wintering bird surveys in the study area have led to the identification of locations where Whooper Swan flightlines may cross the alignment. While Whooper Swans are known to use areas where powerlines are a feature of the landscape with no significant negative effects, as a precautionary measure bird flight diverters have been proposed in locations where flightlines have been identified or determined as likely. Bird flight diverters have been proven to be successful at reducing collisions with powerlines in a range of international scientific studies. This mitigation approach follows standard international good practise for reducing bird collision risk.

12.4.2 John McGuinness (SI-2015-0049)

171 The submission highlights that Tower 123 is located in "bog and rock" and access routes which will require trimming.

Applicant's Response:

172 Photos included in the submission documentation indicate that this description relates to drainage (poor) and not actual bog type habitats of ecological note. This area is farmland with exposed rock and has been reseeded/ improved, hence it has been fully considered in volume 3C chapter 6 of the EIS.

173 Refer to **Section 12.2.8** above which deals with impacts to hedgerows to facilitate access routes.

12.4.3 James and Mary McNally (SI-2015-0091)

174 This is an extensive submission highlighting perceived weakness in the ecology assessment. Points raised as inadequately assessed include Tassan Lough, Bats, Whooper Swan, Curlew, Badgers, Smooth Newt, Marsh Fritillary and Lemgare rocks.

Applicant's Response:

175 The ecology appraisal presented in the application documentation meets the requirements for a proper appraisal. The applicant sets out responses to a number of the specific items in the submission.

1. Bats

176 *This submission highlights that several potential bat roosts occur along the route including a mine house. It highlights the protection status of bats and that an inadequate survey has been conducted of the entire route. The EIS should have included a bat survey report.*

Applicant's Response:

177 As detailed in Paragraph 6.2.4.3.3 of Volume 3C of the EIS building bat roosts will be avoided and no impacts will arise to bat roosts.

178 The surveys implemented allowed adequate determination of potential roost sites such as old buildings etc. Possible roost sites "treelines" are identified in the EIS and appropriate precautionary mitigation is detailed in the EIS for considering bats at trees which may require felling. Mitigation proposed is in accordance with standard NRA 2006 guidelines⁵⁴.

179 There is no statutory requirement for a bat report to be included with the EIS and all required information was included in the EIS.

2. Drumgallon Bog/ Marsh fritillary, Tasson Grassland, lemgare rocks , hedgerows

180 *This submission highlights that there was not enough ground investigations.*

Applicant's Response:

181 The project identifies the sensitivity of these sites in chapter 6 of volumes 3C of the EIS and they will be avoided. Hedgerow habitats were avoided in the route design if not surveyed.

⁵⁴ NRA (2006d). *Guidelines for the Treatment of Bats during the Construction of National Roads Schemes*

3. Curlew breeding in 2011 at Lemgare

182 Curlew are a red listed species of high conservation status

Applicant's Response:

183 It is agreed that Curlew are a red listed species of high conservation status. The area where a pair was recorded in 2011 has been surveyed every year since and no further breeding occurred. The rush field where the pair bred has since been reclaimed and drained and is now less suitable as breeding habitat.

12.4.4 Kilbride Anglers Club (SI-2015-0134)

184 This submission highlight that there are holders of fishing licence on the River Blackwater at Kells and that this area is a cSAC. This submission objects to the development as it is an unsuitable location

Applicant's Response:

185 No significant impacts will arise to the River Boyne and River Blackwater cSAC/ SPA and appropriate mitigation is detailed in the EIS (Chapter 6, volume 3D) and the NIS (Volume 5), the effective implementation of which will ensure that there will be not be any adverse effects on the integrity of the cSAC/ SPA, having regard to its conservation objectives.

12.4.5 Paul and Colette McElroy (SI-2015-0138)

186 This submission highlights a Whooper Swan flightline at Ballintra and a bat colony beside their house.

Applicant's Response:

187 Ecology impacts and precautionary mitigation regarding Whooper Swan are considered in chapters 6 of Volumes 3C & 3D of the EIS and in the Response Report. The Whooper Swan flightline at Ballintra is detailed in the EIS and the alignment will be marked with flight diverters at this location. The bat roost referenced will be avoided and no effects are likely.

12.4.6 Peadar Clinton (SI-20115-0142)

188 This submission highlights that the alignment is beside a pond with moorhen (bird species).

Applicant's Response:

189 Ecology impacts and precautionary mitigation regarding wildfowl (including Moorhen) are considered in chapters 6 of Volumes 3C & 3D of the EIS. The pond detailed was identified in the EIS habitat maps and report. Moorhen would be expected to continue to use the pond notwithstanding the construction and operation of the proposed development.

12.4.7 Brian and Cecil Burgess (SI-2015-0148)

190 This submission highlights Brown Trout and a lake close to their house.

Applicant's Response:

191 This unspecified lake location is likely to be Lough Mourne, which is an important trout fishery in County Monaghan. Ecology impacts and precautionary mitigation are considered in chapters 6 of Volumes 3C of the EIS. Water quality protection measures including avoidance of rivers/ lakes (Trout habitat) are detailed in Chapter 8 (Water) of Volume 3C, and will prevent impacts to the Lough Mourne fishery.

12.4.8 Nigel Donaldson (SI-2015-0150)

192 This submission highlights "catastrophic impact" to wildlife and habitats at wider Cashal Bog complex.

193 It highlights that the access route cannot support the proposed plant detailed.

Applicant's Response:

194 Ecology impacts and precautionary mitigation in the Cashal Bog area are considered in detail in Chapter 6 of Volumes 3C of the EIS.

195 Issues in relation to proposed access tracks have been dealt with earlier in this Response Report.

12.4.9 Lough Egish Rod and Gun Club (SI-2015-0162)

196 The main issues raised in this submission related the potential impact on Whooper Swan and duck flightlines and impacts to a brown trout spawning grounds.

Applicant's Response:

197 Potential ecological impacts and mitigation measures for ecology in the Lough Morne area including measures to reduce risk of collision for Whooper swan (other wildfowl) are detailed in Chapter 6 of Volume 3C & 3D of the EIS.

198 Impacts to fisheries were considered in chapter 6 and 8 of Volumes 3C of the EIS. Inland Fisheries Ireland, the EPA and local authorities were consulted and it was recognised within the EIS that watercourses within the CMSA are significant fishery areas holding Salmon and Trout stocks as well as salmonid spawning and nursery habitats. Pond and lake habitats will be avoided by the proposed development and any stream crossings will be oversailed. No instream works will be conducted. Mitigation for the protection of watercourses during construction is detailed in the EIS and construction practices will adhere to the requirement for the protection of fisheries habitat during construction and development works at river sites, as published by IFI⁵⁵.

⁵⁵ <http://www.fisheriesireland.ie/fisheries-management-1/90-requirements-for-the-protection-of-fisheries-habitat-during-construction-and-development-works-at-ri-1/file>

12.4.10 Val Martin (SI-2015-0172)

199 This submission states that the suggestion that undergrounding is favourable for birds are not adequately addressed in EIS.

Applicant's Response:

200 The potential ecological impacts of an underground cable (UGC) option were considered in sections 8.2.2, 8.3.2 and 8.4.2 of Appendix 5.1 to Volume 3B of the EIS.

12.4.11 Co. Monaghan Anti-Pylon Committee (SI-2015-0278)

201 This submission suggests that;

- There is no evidence that ecology survey was carried out with regard to all work sites. Ex-situ impacts are probable in particular re access routes.
- Impacts to habitats and species on Habitats Directive are not fully assessed in particular bats.
- Differences with NIE ES and high access rates, much higher bat survey effort and inferior EirGrid surveys in comparison due to lack of access.
- Whooper Swans impacts at Ballintra
- Low numbers of badger setts recorded in Co. Monaghan compared to NIE is not reality indicating inadequate baseline survey. Full baseline studies should be conducted.

Applicant's Response:

202 The limited land access is discussed in detail in **section 12.2** above.

203 It is submitted that potential bat roosts and badger setts are adequately considered in the mitigation sections of Chapter 6 Volume 3C of the EIS. Suitable habitat is largely avoided (hedgerows/ treelines) and precautionary mitigation is proposed based on appropriate guidelines.

204 We submit that the approach in NIE was different as they were afforded land access and much of the additional survey work was as a response to request for these surveys from the Department of Environment Northern Ireland.

205 Impacts to Whooper Swan are dealt with in **section 12.2** above.

12.4.12 North East Pylon Pressure (SI-2015-0332)

206 This submission states that due to significant adverse impacts on natural habitats and the identified cSAC that the project is contrary to EIA, and other legislation. This submission highlights that the least favourable route corridor was selected for Whooper Swan.

Applicant's Response:

207 No significant adverse residual impacts are identified in chapter 6 of Volume 3C & 3D of the EIS.

- 208 No significant adverse effects will arise to European sites including the River Boyne and Blackwater cSAC/ SPA and this is discussed in the NIS (Volume 5).
- 209 The selected route corridor included consideration of a wide range of constraints including Whooper Swan, other ecology constraints, landscape, water bodies, settlements etc. The final route selected was based on an evaluation of all constraints.
- 210 It was determined in the Final Re-evaluation Report, Appendix 1.2 of Volume 3B of the EIS that while Whooper Swan impacts were potentially highest on Route 3/ 3B in Co Meath; the risks to other ecological receptors were less significant on 3A and 3B compared to Route Corridor Options 2 and 1.
- 211 The construction and operational phase residual impacts to Whooper Swan for the project, located within Route Corridor 3 and 3B, are identified in section 6.7 of Volume 3D of the EIS. This appraisal does not identify significant adverse impacts to Whooper Swans with implementation of proposed mitigation. Mitigation is in the form of flight diverters which have been shown in numerous studies to reduce collision risks for birds including Whooper Swans. Further detail on the effectiveness of flight diverters as mitigation is detailed in **section 12.3.1.2** above.

12.4.13 NV Irish Farm LLC (SI-2015-0335)

- 212 This submission highlights that their landholding in Bloomsberry extends to the River Boyne and Blackwater SPA and contains habitats and features of ecological interest.

Applicant's Response:

- 213 The landholding at Bloomsberry is sufficiently removed from the proposed development so as not to pose a significant potential impact to fauna and flora at this location.

13 SOILS, GEOLOGY AND HYDROGEOLOGY

13.1 OVERVIEW

- 1 Soils, Geology and Hydrogeology was raised as an issue in approximately 250 no. of submissions/observations. These submissions are listed in Table 31 of **Appendix 1.2** of this report.
- 2 The topic of Soils, Geology and Hydrogeology considers the potential impacts of the proposed development on the ground conditions and on the existing soil, geology and groundwater conditions for both the construction, operational and decommissioning phases of the proposed development. We have identified a number of recurring issues raised in the submissions. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 32 of **Appendix 1.2** of this report.

13.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Soils, Geology and Hydrogeology is evaluated in Chapter 7 - Soils, Geology and Hydrogeology, Volumes 3C & 3D. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

13.2.1 Potential Impact on Mines and Quarries

- 4 One of the principal issues raised relates to potential impacts on existing and historical mines. The existence of and potential impacts on historical mines and mineral resources are addressed in Chapter 7, Volumes 3C & 3D. As outlined therein, desk study information from all available sources was initially assessed in order to identify the location of all mines and quarries proximate to the proposed development. In addition, remote sensing techniques such as LiDAR and aerial photography were used to assess ground contours at the proposed tower locations in order to determine the potential presence of mines, quarries and/or sand and gravel pits.
- 5 There are no quarries located under the proposed alignment. It should be noted that the proposed development will not entail direct impact to existing operations, future identified reserves or access arrangements. There are no active planning applications for sand and gravel pits or quarries under the line.
- 6 A number of submissions raised issues in respect of the potential of the proposed development to impact on specific mines. These issues are addressed below.
- 7 **Tassan Mine:** Details of Tassan Mine are included in the EIS. The historical mine is located 170m south east of Tower 117. The mine area of Tassan CGS was delineated by the GSI and incorporates the locations of shafts, other surface features and historical maps and data. There are no historical records that would suggest mine shafts at Tower 116 or 117. All historical data available from the GSI was assessed. The boundaries of the Tassan Mine

CGS are shown on Figure 7.17 in Volume 3C. Distances to the outlined boundary of Tassan CGS are detailed in Chapter 7, Volume 3C.

- 8 **Lemgare Mine:** The Lemgare mines were avoided by the route selection process, with proposed mitigation measures identified regarding Lemgare County Geological Site (CGS). Historical maps available from the GSI indicate that the underground works are contained within the boundaries of the Lemgare County Geological Site. The boundaries of the Lemgare CGS are shown on Figure 7.17 in Volume 3C. Distances from the proposed works to the boundary of Lemgare CGS are detailed in Chapter 7, Volume 3C.
- 9 **Lisdrumgromly and Annaglogh Mines:** Lisdrumgromly and Annaglogh Mines are located over 200m from the proposed interconnector. OSI and GSI records show the locations of shafts and surface workings for Lisdrumgromly and Annaglogh. Based on a review of the data there is no evidence of underground workings along the proposed line or at tower bases. All historical data available from the GSI was evaluated. The location of 'collapsed shafts' are mapped on the OSI historical maps. No evidence of mine shafts at the tower bases are presented in the submission. Based on a review of the data there is no evidence of underground workings along the proposed line or at tower bases.
- 10 **Other mines:** In relation to Tara Mines, details of tower locations were provided to Tara Mines. No submission/observation to An Bord Pleanála has been made by Tara Mines in relation to the proposed development. In relation to vibration impacts, standards and construction details are outlined in Chapter 11 of Volume 3D.
- 11 Conroy Gold is currently preparing a planning application in respect of lands close to the former Clontibret mines, 3km from the proposed development. No submission/observation to An Bord Pleanála has been made by Conroy Gold in relation to the proposed Interconnection Development.

13.2.2 Potential Impact on Soils

- 12 The nature of the transmission line dictates that the greatest potential for geological impact (including soil, subsoil and bedrock) will be in the construction phase. Potential impacts are outlined in Section 7.5, Chapter 7, Volumes 3C & 3D.
- 13 The construction phase of the proposed development will potentially impact on the ground and geological conditions through the use of temporary access routes to construction sites, temporary storage yard and excavations required for the proposed development. Approximately 28,000 m³ of material will be excavated as part of the proposed development. The tower locations have been selected to avoid, where possible, known areas of lacustrine deposits, intact peat and cutover peat. Intact peat was not identified at any tower location along the line route.
- 14 Accordingly, it is considered that the excavations required for the construction of the principal elements of the proposed development (towers and the substation) will have no adverse impacts on the more sensitive peat ecosystem. In the event that piled foundations are required, the potential impacts of such piling are not significant. Mitigation measures are identified in Section 7.6, Chapter 7, Volumes 3C & 3D. Please refer to Chapter 3, Volumes 3C & 3D for land use impacts and Chapter 7, Volumes 3C & 3D for construction impacts.

13.2.3 Potential Impact on Groundwater Wells

- 15 All available groundwater data from the GSI was considered as outlined in Chapter 7, Volume 3C and 3D and details of groundwater wells were set out in Appendix 7.1. Individual wells will be dealt with in accordance with the mitigation measures outlined in the EIS and in accordance with principles developed in the ESB / IFA (1985) Code of Practice for Survey, Construction and Maintenance of Overhead Lines in Relation to the Rights of Landowners.
- 16 Given the distance between the nearest wells and the proposed scheme, the mitigation measures outlined in the application documentation are considered sufficient to address potential impacts. In relation to site specific wells identified in submissions to An Bord Pleanála, the following EIS mitigation measures will be implemented.
- 17 In the event of accidental spills, mitigation measures will be implemented in accordance with Section 7.6, Volume 3C & 3D and the outline Construction Environmental Management Plan (CEMP).
- 18 In the unlikely event of damage or degradation of a water supply, a replacement potable water supply would be provided. Should a water pipe be severed or damaged, immediate repair shall be completed.

13.2.4 Potential Impact on Drainage

- 19 In relation to land drainage, please refer to Chapter 3, Volume 3C & D and Chapter 7, Volume 3B. Affected land drains may need to be diverted but this will only be carried out in a manner that does not impact on existing land drainage patterns.

13.2.5 Potential Impact on Geological Heritage

- 20 In relation to geological heritage please refer to Chapter 7, Volume 3C & 3D. No significant impacts are predicted on geological heritage as a result of the construction and operational phases of the proposed development.

13.2.6 Potential Waste Impacts

- 21 All waste generated on site will be managed in an environmentally responsible manner and in accordance with the outline CEMP. The management of waste during the construction phase will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority, followed by reuse and recycling. Waste disposal will comply with the *Waste Management Act 1996* as amended. As outlined in Chapter 7, Volumes 3C & 3D, the vast majority of excavated material will consist of subsoil and naturally excavated soils and rock.

13.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

13.3.1 Northern and Western Regional Assembly (SI-2015-0026)

22 In their submission the Northern and Western Regional Assembly, (Item 2) raised the following issue: *“The management of waste arising from the construction process, in the context of the emerging policy for future landfill disposal in the Draft Waste management (sic) for the Connaught/Ulster Region. The applicant may need to be more explicit on waste disposal, specifically locations and environmental impacts.”*

Applicant's Response:

23 All waste generated on site will be managed in an environmentally responsible manner and in accordance with the outline CEMP. The management of waste during the construction phase will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority followed by reuse and recycling. Waste disposal will comply with the *Waste Management Act 1996*, as amended. As outlined in Chapter 7, Volume 3C, it is considered that the vast majority of excavated material will consist of subsoil and naturally excavated soils and rock. If removal off site is required, waste soil/rock material will be transported to an appropriate waste recovery/disposal facility operated under a waste license or permit. Specific outlets for such material will be a matter for the contractor and these will be determined by the available capacities at said facilities at the time of construction. The proposed development will consider the implications, if any, of the final *Waste Management Plan 2015-2021 for the Connaught/Ulster Region*. The management of waste arising from the proposed development is consistent with the *Draft Waste Management Plan 2015-2021 for the Connaught/Ulster Region*.

13.3.2 Health Service Executive (SI-2015-210)

24 The Health Service Executive (HSE) observe that *“it is hard to locate information on existing private boreholes within the EIS, all information appears to be taken from data from the GSI and is not site specific to the pylon tower location”*.

25 *“Specific details of the proposed monitoring should be included in the CEMP. Specific details of mitigation for affected householders should their water supply be adversely affected by the development should also be specified”*.

Applicant's Response:

26 All available groundwater data from the GSI were considered as outlined in Chapter 7 of Volumes 3C & 3D. Details of groundwater wells were provided in Appendix 7.1 to Volumes 3C & 3D.

27 Given the distance between the nearest wells and the proposed scheme, mitigation measures are considered sufficient to address any potential impacts. In relation to site specific wells identified in submissions to An Bord Pleanála, the following EIS mitigation measures will be implemented.

- 28 Water level and Water Quality Monitoring will be undertaken on groundwater wells before, during and after construction, in accordance with Sections 7.5 and 7.6 Chapter 7, Volume 3C & 3D;.
- 29 Sediment control measures will be undertaken in accordance with Sections 7.5 and 7.6 Chapter 7, Volume 3C & 3D;
- Hydrocarbon and Cement Control measures will be undertaken in accordance with Sections 7.5 and 7.6 Chapter 7, Volume 3C & 3D; and.
 - No refuelling will be undertaken within 50m of surface water streams or groundwater wells.
- 30 In the event of accidental spills, mitigations measures will be implemented in accordance with Section 7.6, Chapter 7, Volumes 3C & 3D and the outline CEMP.
- 31 In the unlikely event of damage or degradation of a water supply, a replacement potable water supply would be provided. Should a water pipe be severed or damaged, immediate repair will be undertaken.

13.3.3 Inland Fisheries Ireland (SI-2015-0212)

- 32 A number of issues have been raised by Inland Fisheries Ireland (IFI) around watercourse/ pollution protection/ prevention.

Applicant's Response:

- 33 Engagement with the IFI was undertaken as part of the consultation phase. All relevant procedures, as recommended by the IFI have been incorporated into the EIS and the outline CEMP. It is also proposed to continue to positively engage with the IFI during the construction phase of the proposed development.
- 34 The proposed mitigation measures have been reviewed in light of IFI comments and the project team is satisfied that the mitigation measures outlined in the EIS, NIS and outline CEMP will deal with the issues raised. All mitigation measures identified in the EIS and OCEMP will be incorporated into the final CEMP to be prepared in respect of the proposed development. All watercourses are considered within these mitigation measures irrespective of their designation.
- 35 No in-stream works are proposed.

13.3.4 Monaghan County Council (SI-2015-0215)

- 36 There is a specific point raised by Monaghan County Council in relation to site specific waste management. Comments relate to the requirement for specific disposal sites for the deposition of excavated material. Monaghan County Council suggests that specific disposal routes need to be detailed to assess traffic impacts.

Applicant's Response:

- 37 All waste generated on site will be managed in an environmentally responsible manner and in accordance with the outline CEMP. Waste disposal will comply with the *Waste*

Management Act 1996 as amended. Traffic impacts on the road infrastructure have been assessed, as detailed in Chapter 13 of Volume 3C.

- 38 As outlined in Chapter 7 of Volume 3C, it is considered that the vast majority of excavated material will consist of subsoil and naturally excavated soils and rock. The surplus excavated material from tower excavations will be approximately 10,500m³ in the CMSA. Assuming a worst case scenario, all material will be taken off site and deposited at an appropriately licensed/permitted waste management site. As it is anticipated that the excavated materials would comprise natural uncontaminated soils, there would be no contamination restrictions on the ability of licensed/ permitted waste management sites to accept the materials.

13.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

13.4.1 John Morgan (SI-2015-0055)

- 39 The submission raises a specific issue relating to drainage ditches and cattle drinking from the local stream. The stream in question is located 40m from Tower 105.

Applicant's Response:

- 40 Please refer to **Section 13.2.3** and **Section 13.2.4** above. The mitigation measures outlined in the EIS are sufficient to deal with any potential impacts. Shores/drainage ditches will be dealt with in accordance with the mitigation measures outlined in Chapter 8, Volumes 3C & 3D and in Chapter 7 of Volume 3B. The proposed mitigation measures will address the issues raised in relation to Tower 105. No significant residual impacts are predicted in relation to groundwater or surface water for the proposed development.

13.4.2 Various ((SI-2015-0059), (SI-2015-0184) and (SI-2015-0185))

- 41 The submissions have specific points relating to shores and land drainage.

Applicant's Response:

- 42 Shores/Drainage ditches will be dealt with in accordance with the mitigation measures outlined in Chapter 8, Volumes 3C & 3D and in Chapter 7 of Volume 3B.
- 43 The proposed mitigation measures will address all site specific issues raised in submissions SI-2015-0059, SI-2015-0184 and SI-2015-0185. No significant residual impacts are predicted in relation to groundwater for the proposed development.

13.4.3 Lough Egish Rod and Gun Club (SI-2015-0162)

- 44 The submission has specific points relating to angling in Lough Egish.

Applicant's Response:

- 45 Mitigation measures outlined in Chapters 6, 7 and 8 of Volumes 3C & 3D are considered sufficient to deal with any potential impacts raised by the Lough Egish Rod and Gun Club submission.

- 46 There are no significant predicted impacts on Lough Egish as a result of the short term construction of Towers 156 to Tower 163, which are located in the Lough Egish catchment. The nearest tower is over 500m from Lough Egish. Sediment control measures will be implemented in accordance with the outline CEMP. Fisheries impacts are assessed in Chapter 6 of Volume 3C and addressed above in **Section 12.4.9**.

13.4.4 NEPP (SI-2015-0332)

- 47 The submission considers that detailed site investigations are required at each tower base.

Applicant's Response:

- 48 Construction impacts are dealt with specifically in Chapter 7, Volume 3C & 3D. ESB Networks have a standard suite of foundation designs for each tower type to cater for the potential variation in soil conditions. In addition a suitably qualified site engineer will be present during the installation of all tower foundations. In relation to site investigations and construction methodology, details for the construction methodology of the line route are addressed in Chapter 7, Volume 3B.
- 49 Desk study information was supplemented by site visits, visual assessment and site investigations where access to lands was granted. Site investigation comprised of geomorphology mapping by a site geologist and soil sampling. Where access was granted, auger samples at tower bases were also undertaken to confirm mapped information. Soils were logged in accordance with BS5390:1999. The geomorphology, aerial photograph, visual assessment of exposures and site investigations all indicate that the available soils and geology datasets are accurate. A number of towers will be located on areas of soft sediments, including Lacustrine or cutover peat, as identified in Chapter 7 Volumes 3B, 3C & 3D. In the event that piled foundations may be required at these locations, the predicted soil, geology and hydrogeology impacts of piling are not significant. Foundations will be designed to meet the relevant construction standards.
- 50 The construction methodology and foundation suites (which are detailed in the application documentation) will be similar to that used on the existing 220 / 400 kV lines previously constructed in Ireland and currently being constructed throughout Europe and internationally.

14 WATER

14.1 OVERVIEW

- 1 Water was raised as an issue in approximately 292 no. of submissions/observations. These submissions are listed in Table 33 of **Appendix 1.2** of this report.
- 2 The topic of Water considers the potential impacts on the surface water (rivers, lakes, etc.) conditions and on the environment for both the construction and operational phases of the proposed development. We have identified a number of recurring issues raised in the submissions. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is in Table 34 of **Appendix 1.2** of this report.

14.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Water is evaluated in Chapter 8 Water, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

14.2.1 Potential Impact on Flooding

- 4 A number of submissions relate to the proximity of proposed tower bases to areas prone to flooding. Potential impacts are identified in Section 8.6, Volume 3C & 3D with appropriate mitigation measures detailed in Section 8.7, Volume 3C & 3D. and included in the outline CEMP
- 5 Based on a review of the available flood data and the proposed development, a negligible impact is predicted from flooding of tower bases. Foundations for towers are located completely below ground and there will be no increase in ground levels as a result of the works. The towers will have an imperceptible impact on floodplain storage. Floodplain flows shall be able to flow through the open steel frame. The minimum clearance from ground level to the overhead lines at the towers is in excess of 18m. In addition the mid span of the cables is over 9m above ground level.

14.2.2 Potential Impact on Drainage Ditches

- 6 A number of submissions relate to the proximity of the proposed development to existing drainage ditches. Potential impacts are identified in Section 8.6, Chapter 8, Volume 3C & 3D with appropriate mitigation measures detailed in Section 8.7, Chapter 8, Volume 3C & 3D and in the Outline CEMP, Appendix 7.1, Volume 3B.

14.2.3 Potential Impact on Rivers, Lakes and Streams

- 7 A number of submissions relate to the proximity of the proposed development to rivers, lakes and streams. The issues identified relate to short term construction impacts. Stream locations are identified within Section 8.4, Volume 3C & 3D, Section 6.4, Volume 3C & 3D,

Figures 8.1-8.4 Volume 3C & 3D Appendices and on Volume 1B drawings. Potential impacts of construction are identified in Section 8.6, Volume 3C & 3D with appropriate mitigation measures detailed in Section 8.7, Volume 3C & 3D. No significant residual impacts are predicted during the construction or operational phases.

- 8 A number of submissions were made in relation to impacts on the River Boyne and River Blackwater cSAC and its tributaries. Stream locations are identified within Section 8.4, Chapter 8, Volume 3C & 3D, Section 6.4, Volume 3C & 3D, Figures 8.1-8.4 Volume 3C & 3D Appendices and on Volume 1B drawings. Potential impacts of construction are identified in Section 8.6, Volume 3C & 3D with appropriate mitigation measures detailed in Section 8.7, Volume 3C & 3D. No significant residual impacts are predicted during the construction or operational phases.

14.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

14.3.1 Health Service Executive (SI-2015-0210)

- 9 The submission has a number of specific points relating to water. The HSE state that specific monitoring and mitigation measures should be detailed in the CEMP in relation to disruption of a groundwater supply. All wells in the vicinity of the proposed line should be identified prior to construction. Specific measures will be implemented in the unlikely event water supplies are disrupted.

Applicant's Response:

- 10 All available groundwater data from the GSI was assessed as outlined in Chapter 7 of Volumes 3C & 3D of the EIS. Details of groundwater wells were identified in Appendix 7.1 Volumes 3C & 3D.
- 11 Given the distance between the nearest wells and the proposed development the mitigation measures proposed are considered sufficient to address any potential impacts. In relation to site specific wells identified in submissions to An Bord Pleanála, the following EIS mitigation measures will be implemented.
- Water level and water quality monitoring will be undertaken on groundwater wells before, during and after construction, in accordance with Sections 7.5 and 7.6, Volume 3C & 3D.
 - Sediment control measures will be undertaken in accordance with Sections 7.5 and 7.6, Volume 3C & 3D.
 - Hydrocarbon and cement control measures will be undertaken in accordance with Sections 7.5 and 7.6, Volume 3C & 3D.
 - No refuelling will be undertaken within 50m of surface water streams or groundwater wells.
- 12 In the event of accidental spills, mitigation measures will be implemented in accordance with Section 7.6, Volumes 3C & 3D and the outline CEMP.

- 51 In the unlikely event of damage or degradation of a water supply, a replacement potable water supply will be provided. Should a water pipe be severed or damaged, immediate repair will be undertaken.

14.3.2 Inland Fisheries Ireland (SI-2015-0212)

- 13 A number of issues are raised in relation to watercourse/ pollution protection/ prevention.

Applicant's Response:

- 14 Engagement with the IFI was undertaken as part of the consultation phase. All relevant procedures, as recommended by the IFI have been incorporated into the EIS and the outline CEMP. It is also proposed to continue to positively engage with the IFI during the construction phase of the proposed development.
- 15 The proposed mitigation measures have been reviewed in light of IFI comments and the project team is satisfied that the mitigation measures outlined in the EIS, NIS and outline CEMP address the issues raised. All mitigation measures identified in the EIS and outline CEMP will be incorporated into the final CEMP prepared in respect of the proposed development. All watercourses are considered within these mitigation measures irrespective of their designation.
- 16 No in-stream works are proposed to be carried out.

14.3.3 Monaghan County Council (SI-2015_0215)

- 17 The submission has specific points relating to water. The main issues raised relate to impacts on wetlands/fens/bogs, and general surface water/groundwater impacts. Hydrological impacts should be considered for some sites including Bocks Lough, Corlea Bog and Raferagh Fen.

Applicant's Response:

The issue highlighted by Monaghan County Council relates to the interaction between ecology and hydrology. The submission is addressed in **Section 12 herein**, however the details are repeated below for completeness.

Raferagh Fen

- 18 Towers 197 and 198 are the nearest towers to Raferagh Fen/Raferagh Lough. Raferagh Lough is approximately 100m east of Tower 198 as outlined in Chapter 6 and 8, Volume 3C. Based on topography, surface water runoff from tower 197 and 198 is towards the wetland and lough. Sediment control measures will be implemented upslope and downslope of both towers. Sediment control measures will be implemented in accordance with the outline CEMP, Chapter 8, Volume 3C of the EIS and the OCEMP Appendix 7.1, Volume 3B Appendices.
- 19 Based on a review of the elevations, Tower 197 is located at approximately 172.8 m OD approximately 15 m above the level of Raferagh Fen. Surface water runoff at the tower bases will not be altered as a result of construction at Tower 197. Tower 198 is located at approximately 171.9 mOD approximately 14 m above the level of Raferagh Fen. Surface water runoff will not be altered as a result of construction at Tower 198.

20 Mitigation measures will be in accordance with the Section 8.6, Chapter 8, Volume 3C and the outline CEMP Appendix 7.1, Volume 3B Appendices. There will be no significant residual impacts on Raferagh Lough during the construction or operation phase.

Corlea Bog

21 Towers 206 and 207 are the nearest towers to Corlea Bog. Corlea Bog is approximately 130m south of Tower 206 and approximately 30 northeast of Tower 207 as outlined in Chapter 6, Volume 3C of the EIS. Based on topography, surface water runoff from tower 206 is towards the wetland area. Surface water runoff from Tower 207 is towards a drainage ditch, towards the local road and eventually flows into the wetland area. Sediment control measures will be implemented upslope and downslope of both towers.

22 Based on a review of the elevations, Tower 206 is located at approximately 158.2 m OD approximately 9m above the level of Corlea Bog. Surface water runoff will not be altered as a result of construction at Tower 206. Tower 207 is located at approximately 151.7 mOD approximately 2.7m above the level of Corlea Bog, on the opposite side of a local road. Surface water runoff will not be altered as a result of construction at Tower 207.

23 Mitigation measures will be in accordance with the Section 8.6, Volume 3C of the EIS and the outline CEMP Appendix 7.1 to Volume 3B. There will be no significant residual impacts on Corlea Bog during the construction or operation phase.

Bocks Lough

24 Towers 175 and 176 are the nearest towers to Bocks Lough. Bocks Lough is approximately 210m east of Tower 175 and Tower 176. Based on topography, surface water runoff from tower 175 is towards the local road which eventually drains to Bocks Lough. Sediment control measures will be implemented upslope and downslope of both towers. Based on a review of the elevations, Tower 175 is located at approximately 132.3 m OD approximately 20m above the level of Bocks Lough. Surface water runoff will not be altered as a result of construction at Tower 175. Tower 176 is located at approximately 119.1 mOD approximately 5m above the level of Bocks Lough, on the opposite side of a large drumlin.

25 Mitigation measures will be in accordance with the Section 8.6, Volume 3C and outline CEMP Appendix 7.1 to Volume 3B . There will be no significant residual impacts on Bocks Lough during the construction or operational phase.

14.3.3.1 Surface water/ Groundwater

26 Comments relate to the requirement for site specific construction plans for each tower site. Monaghan suggest stockpiles, phasing etc. should be detailed.

Applicant's Response:

27 The proposed development has been designed so as to minimise the disturbance of soil both in terms of time period and area of works. Standard mitigation measures, outlined in Section 8.6, Volume 3C of the EIS, are considered sufficient to mitigate potential hydrological impacts. Potential impacts in terms of water were already identified within the EIS in Chapter 8, Volume 3C of the EIS. Mitigation measures will be in accordance with the Section 8.6, Volume 3C of the EIS and the outline CEMP Appendix 7.1, Volume 3B Appendices. This suite of mitigation measures is applicable for all towers, the majority of which are located in agricultural fields. In the case of towers adjacent to watercourses,

construction will be undertaken in consultation with Inland Fisheries Ireland and relevant authorities, including Monaghan County Council. IFI approval will be sought in relation to crossing of streams along the proposed development.

- 28 EirGrid will appoint a suitably qualified and experienced environmental officer for the period of the construction of the project. An Ecological Clerk of Works (ECoW) (who will be a qualified Ecologist) will attend on site during construction, to advise on the ecological mitigation as detailed in the EIS.
- 29 A number of the mitigation measures which are relevant to tower construction as outlined in Section 8, Volume 3C of the EIS and Appendix 7.1, Volume 3B are repeated below.
- 30 Silt barrier / silt curtains will be used where towers are to be located and / or works are to be undertaken near watercourses. Correct installation of silt fences is vital and will be supervised by the construction manager and ECoW. The silt barrier / silt curtain will be shaped and installed so that it will catch runoff, without the water flowing underneath or around the edges of the barrier. The silt barrier will be located down-gradient of the works and inspected on a regular basis, including during and after rainfall events. For steep slopes, more than one silt curtain will be used. The edges of the silt curtain will be turned upslope to prevent water going around the edges. Grips, sumps, straw bales and sediment traps will be installed to capture silt where applicable. Each of these will be maintained daily by the contractor to ensure that they remain effective and continue to reduce the likelihood of an incident occurring.
- 31 Stockpiles of excavated materials will be graded to a <1:4 profile. Topsoil and subsoils will be stored separately. Stockpiles of mineral soils and peat will be <2m and <1m in height respectively.
- 32 Precautions will be taken to avoid fuel spillages. These include:
- Use of secondary containment, e.g. bunds around oil storage tanks;
 - Use of drip trays around mobile plant;
 - Supervising all deliveries and refuelling activities; and
 - Designating and using specific impermeable refuelling areas isolated from surface water drains.
- 33 All site personnel will be trained and aware of the appropriate action in the event of an emergency, such as the spillage of potentially polluting substances. Spill kits will be retained to ensure that all spillages or leakages are dealt with immediately and staff will be trained in their proper use. Any servicing of vehicles will be confined to designated and suitably protected areas. Any pollution incident or spill will be reported to the regulator and remediated to their original condition.
- 34 Wash down and washout of concrete transporting vehicles will not be permitted at the location of construction. Such wash down and washout activities will take place at an appropriate facility offsite. Water quality monitoring will be undertaken prior to the commencement of construction to confirm baseline data and ensure there is no deterioration in water quality. This will be targeted on watercourses considered to be at a

higher risk of pollution (i.e. watercourses within 20m of the proposed construction works). Water quality monitoring will include daily inspection of adjacent watercourses.

14.3.4 Meath County Council (SI-2015-0216)

35 The submission has a number of specific points relating to water. The Council have suggested a number of conditions be imposed on the development, including specific monitoring of water features.

36 The potential for flooding of tower bases was identified by Meath County Council at Towers 284, 287, 288, 309, 310 and 314. The extensive drainage network, particularly in the northern part of the MSA, may be impacted locally thus creating the flood risk. Overall, the Council have *'no objection to the proposed project subject to the various conditions in the main body of the report'*.

Applicant's Response:

37 Specific monitoring of surface water features, as requested by Meath County Council will be implemented in full

38 The Department of Environment, Heritage and Local Government and the Office of Public Works (OPW) issued *The Planning System and Flood Risk Management – Guidelines for Planning Authorities and Technical Appendices* in November 2009. These guidelines outline a three staged approach to be adopted in carrying out flood risk appraisals. The stages of appraisal and assessment are:

- Stage 1 – Flood risk identification
- Stage 2 – Initial flood risk assessment
- Stage 3 – Detailed flood risk assessment

39 The Planning System and Flood Risk Management (PSFRM) Guidelines describe a Stage 2 Assessment as follows:

"to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped"

40 This flood risk assessment has been carried out as a Stage 2 Assessment – Initial flood risk assessment. The potential sources of flood risk have been reviewed using the Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study, Preliminary Flood Risk Assessment (PFRA) Mapping⁵⁶.

⁵⁶ PFRA Maps available at: <http://www.cfram.ie/pfra/interactive-mapping/>. It should be noted that this mapping has the following user note: *"The flood extents shown on these maps are based on broad-scale simple analysis and may not be accurate for a specific location"*

- 41 The PSFRM Guidelines are based on a Sequential Approach to the management of flood risk in relation to planning decisions. The guidelines recommend that the Sequential Approach is applied as follows:
1. **Avoid** development in flood risk areas where possible.
 2. **Substitute** the type of development by a type which is not especially vulnerable to flooding.
 3. **Justify** that the development is being considered for strategic reasons.
 4. **Mitigate** to ensure flood risk is reduced to acceptable levels.
 5. **Proceed** only when Justification Test is passed. Ensure emergency planning measures are in place.
- 42 There are 299 no. towers along the proposed route, of which 7 no. are located within the PFRA Flood Zone A or B: These are Towers 284, 287, 288, 309, 310, 314 and 315. The Justification Test was then applied on the basis of the Flood Zone within which the proposed development is located. The towers were conservatively classified as Highly Vulnerable Development.
- 43 The proposed overhead line route is from Tower 102 to Tower 401. It is proposed to locate seven of the 299 towers within the PFRA Flood Zone A or B. The proposed development is not excluded from any land use zones. The proposed interconnector is designated as a Project of Common Interest by the European Commission. Projects of Common Interest are considered key infrastructure projects.
- 44 The proposed towers will be comprised of open structure galvanised steel lattice towers (see Figure MT-008-01 to MT-008-04). Foundations for towers are located completely below ground and there will be no increase in ground levels as a result of the works. The towers will have an imperceptible impact on floodplain storage. Floodplain flows shall be able to flow through the open steel frame. The minimum clearance from ground level to the overhead lines at the seven towers ranges from 21.7m to 28.8m. In addition the mid span of the cables is over 9m above the flood zones A or B.
- 45 **Table 14.1** details the height of cables above ground level as Shown in Volume 1B, Plan and Profile figures.

Table 14.1: Height of cables above ground level

Tower	Ground clearance
284	28.7
287	24.8
288	21.8
309	25.7
310	28.8
314	25.7
315	20.8

- 46 In relation to drainage networks, particularly in the northern part of the MSA, no above ground hardstand areas are proposed in this part of the development. Foundation suites are shown in Figure MT-007-001 to Figure MT-007-003, Volume 1B. Therefore there will be no increase in Greenfield runoff rates. In summary, there are no significant residual impacts as a result of the proposed development in relation to flooding.

14.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

- 47 Specific issues were raised, in relation to the water impact appraisal of the North-South 400 kV Interconnection Development. These are addressed below:

14.4.1 Maurice and Joanne McAdam (SI-2015-0171)

- 48 The submission has specific points relating to Tassan Mine, Lemgare Mine, Lisdrumgormly and Annagloagh Mine and the potential for mine collapse and generation of 'toxic water'.

Applicant's Response:

- 49 Details of Tassan Mine and Lemgare Mine are included in Section 8.4, 7.5 and 7.6 Volume 3C of the EIS. Both are located within 200m of the proposed interconnection Development Lisdrumgormly and Annagloagh Mine are located over 250m from the proposed interconnector. It is not proposed to undertake excavations of the aforementioned mines as part of the construction works. It is not proposed to use access routes in the areas of the former mines.

14.4.2 Gabriel Ward (SI-2015-0296)

- 50 The submission has specific points relating to impacts on a surface water pond near Tower 172.

Applicant's Response:

- 51 There are no significant residual impacts as a result of the proposed development on the pond located near Tower 172. The proposed development has been designed to minimise the disturbance of soil both in terms of the time period and the area of proposed works. The mitigation measures outlined in Section 8.6 of Volume 3C and the outline CEMP Appendix 7.1, Volume 3B Appendices are considered sufficient to mitigate potential hydrological impacts on the pond proximal to Tower

15 NOISE & VIBRATION AND AIR QUALITY & CLIMATE

15.1 OVERVIEW

- 1 Noise & Vibration and Air Quality and Climate was raised as an issue in approximately 96 no. of submissions / observations. These submissions are listed in Table 35 of **Appendix 1.2** of this report.
- 2 We have identified a number of recurring issues raised in the submissions in relation to Noise & Vibration and Air Quality and Climate. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 36 of **Appendix 1.2** of this report.

15.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Air, Noise and Vibration is evaluated in Chapter 9 Air, Noise and Vibration, Volumes 3C & 3D of the EIS. The topic of Air Quality and Climate is evaluated in Chapter 10 Air Quality and Climate, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.
- 4 Numerous submissions reference “noise pollution” or the “noise that will come from” the proposed development without stating whether it is noise from the construction phase or operational phase noise or from both that is the cause of concern. In the interest of completeness both are dealt with in turn herein.

15.2.1 Potential Impact from Construction Noise

- 5 A number of submissions raise the issue of the potential impact of noise associated with the construction of the proposed development.

Applicant's Response:

- 6 With regard to the construction phase, as detailed in Section 9.5.2 of Volume 3C and Section 9.5.2 of Volume 3D of the EIS, predicted noise levels have been estimated using the methodology described in “BS: 5228: Noise and control on construction and open sites”, (2009). These are the established and accepted standards in respect of noise during construction. Predictions are based on typical equipment used during various construction stages of the proposed development.
- 7 In relation to plant and machinery, predictions are based on an $L_{Aeq, 1hour}$ value, with all machinery listed in Volume 3C & 3D, Chapter 9, Table 9.4 of the EIS operating for a continual period of 1 hour, as seen below. This is considered a worst case scenario, as this machinery is most unlikely to operate simultaneously.
- 8 Additionally, calculations are based on minimum distances between site activities and the nearest noise sensitive locations, with no allowance for screening by intervening hedges, trees or buildings.

Table 15.1: EIS Table 9.4: Construction phase noise predictions

CONSTRUCTION PHASE			
BS5228 Calculations	Estimated Construction noise levels at varying distances L_{Aeq} 1 hour		
Machinery	50m	75m	100m
Wheeled loader	65	60	57
Winch	56	51	48
Line Tensioner	56	51	48
Road Lorry pulling up	49	44	41
Tracked Excavator	65	60	57
Vibratory hammer	61	56	53
Tracked crane moving	66	61	58
Support crane moving	57	52	49
Lorry unloading	63	58	55
Diesel Generator	54	49	46
Continuous Flight Auger	56	51	48
Combined Level L_{Aeq} 1hour	71dB	67dB	64dB

- 9 As the predicted values are a worst-case assessment the impact is likely to be moderate, with regard to the nearest noise sensitive locations. The temporary nature of the construction period and the variety of machinery used will ensure that no construction plant is operational for long periods.
- 10 All the plant listed in Table 9.4 Volume 3C & 3D, of the EIS (replicated above) will not be in use at the same stage of construction, as it is a phased process. As such the actual noise impact to be expected at the nearest noise sensitive receptor would be significantly less than the worst case scenario described in Table 9.4. This construction phase will therefore result in a moderate temporary, transient noise impact.

15.2.2 Potential Impact of Operational Noise

15.2.2.1 Potential Corona Discharge Noise

- 11 A number of submissions have raised the issue of the potential impact of corona noise during the operational phase of the proposed development.

Applicant's Response:

- 12 Corona noise can occur on transmission lines carrying higher voltages and is addressed in section 9.5.3.1 of Volumes 3C & 3D of the EIS as detailed below. Most modern transmission lines and substations are designed to reduce the magnitude of the electric field surrounding the line conductors below the air breakdown value that would cause audible corona noise. Occasionally a small sharp point can be found on a line or on nearby hardware that will result in a corona discharge.
- 13 Corona discharge typically occurs where a sharp point or edge is present, either on the conductor or the tower coupling. It may be the case, that under certain exceptional circumstances, the background level may be exceeded by more than +10 dB. However due to the unpredictability of corona noise derived from overhead lines and very short limited

duration of such discharges (typically peak levels of a duration of less than 1 second) the overall impact when considered over an hour (ref BS4142 daytime reference time period) will be minor.

- 14 The L_{50} value during rain for proposed 400 kV overhead lines, reaches a maximum level of 46.7dB $(A)_{L50}$ at 50m from the centre of the proposed line route. This is over 4dB (A) below the 52dB $(A)_{L50}$ NYPSC guideline limit for OHL noise in rainy conditions as described in Section 9.5.3.1 of Volumes 3C & 3D of the EIS.
- 15 The maximum fair weather value of 41.4dB (A) is significantly lower than the 52dB (A) guideline limit value. Based on this comparison the proposed 400 kV transmission line is not predicted to cause significant noise impact to nearby residents.
- 16 The level of audible corona at any time is dependent on the prevailing weather conditions. The dielectric strength of air is lower in wet weather than in dry weather. Thus the voltage stress at a conductor surface does not have to reach such high levels in wet weather for corona noise to become audible.
- 17 In fair weather, corona sources are sufficiently few in number that this noise is generally of no concern and is often inaudible to people on the ground. Corona noise attains higher levels and may become audible in wet weather, when large numbers of corona sources form as water droplets on the conductors as seen in Figure 9.2, extracted from Chapter 9, Volume 3C and 3D of the EIS below.

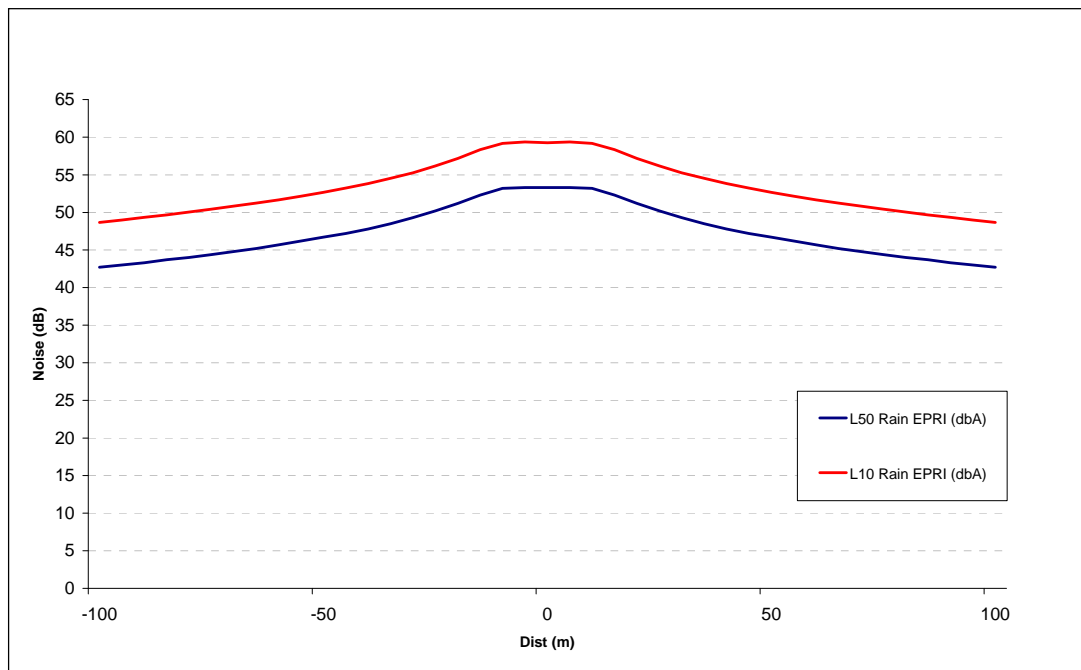


Figure 15.1: EIS Figure 9.2: Audible noise from single circuit 400 kV towers

- 18 However, on such occasions, the background noise level of rainfall and wind tend to mask the noise from the transmission line. People are likely to find any noise from a high voltage line to be more noticeable during periods of light rain, snow or fog when they are more likely to be outdoors, or to have windows open, and when the background noise is generally lower, than would be the case during heavier rain.

15.2.2.2 Aeolian Noise

- 19 A number of submissions have raised the issue of the potential impact of 'Aeolian noise' during the operational phase of the proposed development which is addressed in section 9.5.3.3 of Volumes 3C & 3D of the EIS.

Applicant's Response:

- 20 'Aeolian noise' also known as turbulent wind noise may be created due to high wind speeds affecting the towers and conductors. The amount of aeolian noise is directly linked to wind speed and direction. This type of noise impact is normally not considered as significant as the ambient noise levels are also higher (affected by occurrences such as wind in trees) therefore minimising any impact.
- 21 Aeolian noise very rarely occurs on 220kV or 400 kV lines, and is not expected to arise on the proposed development. It is important to note that there are presently tens of thousands of metres of existing overhead line and associated towers in operation throughout Ireland and, to date, there has been no significant history of complaint due to aeolian noise. . As such no significant impact from aeolian noise is predicted for the proposed development.

15.2.2.3 Continuous Operational Noise

- 22 Some submissions raise the concern of noise nuisance due to the continuous operation of the 400 kV OHL.

Applicant's Response:

- 23 Due to the high voltages associated with 400 kV overhead transmission lines continuous operational noise can be present. As outlined in Section 9.4.2.1, Volume 3D of the EIS a noise survey at an existing 400 kV overhead line route at Woodland Substation, Co. Meath has been conducted, in meteorological conditions as per ISO 1996: 'Acoustics- Description and measurement of environmental noise'. Measurements were made placing the microphone at a height of 1.5m above ground level and were free field, measured >2m from reflecting surfaces.
- 24 The line route that was surveyed is at Woodland substation. This line route runs to the west of the Woodland substation on a route south of the village of Summerhill, County Meath. In each case the substation/tower noise was audible but not dominant over the ambient noise levels.
- 25 The average background noise level (L_{A90}) under the existing 400 kV Line at Bogganstown, County Meath was 39.6dB. The average background noise level (L_{A90}) at Woodland substation was 37.5dB. The noise climate at Bogganstown includes not only the existing 400 kV OHL, but passing traffic, foliage noise, and similar ambient environmental noise sources.
- 26 The noise climate at Woodland substation includes not only the existing 400 kV line, but all the plant/equipment of the substation and the surrounding area and as such would be expected to have more potential for noise emission than the proposed OHL.

- 27 Since this does not represent significant noise levels, and are cumulative of all ambient noise sources in the area, it is considered that there will be no significant continuous noise impact from the overall proposed development.

15.2.2.4 Degradation of the Transmission Line Over Time

- 28 Some submissions raise the concern of noise nuisance and the degradation of the transmission line over time, with a consequent increase in noise level.

Applicant's Response:

- 29 The ongoing noise level from the proposed development has been described in the EIS and is not expected to cause any significant noise impact. With regard to the degradation of the transmission line over time, the potential for resultant increased noise impacts will be negated by ongoing routine line maintenance.

- 30 It is true that noise from a line can be exacerbated by rough or uneven line surface over time. However, the existing 400 kV line from Woodland Substation in County Meath was surveyed in preparation of the EIS for this proposed development. This line has been in operation since 1984/1985, and the noise impact from this line is shown to be insignificant in terms of ambient noise levels, due to its design and ongoing routine maintenance.

15.2.2.5 Equine Industry & Farm Livestock

- 31 A number of submissions state that the OHL will have an effect on horses and on farm animals; sheep, cattle etc. The submissions do not specifically state in most cases what the nature of this perceived impact is.

Applicant's Response:

- 32 In regard to a potential noise impact, there is no significant noise impact to animals predicted from the operational phase of the project, save from occasional noise from helicopter surveying of the completed OHL. This is described and assessed in the EIS, in both the noise and vibration (Section 9.5.3, Volume 3C and Volume 3D) and Agronomy (Section 3.7.3, Volume 3C and Volume 3D) sections of the EIS. There is a protocol in place to minimise the impact of the annual low flying helicopter inspections on high sensitivity farms and if the land owner contacts ESB the fly over inspections can avoid, or inspections can be timed to suit, the land owner. Therefore the grazing, sleeping and exercise regimes of horses and other animals will not be affected by the proposed development.

- 33 Corona noise from the OHL will not have a sudden onset and will gradually become audible in rain or foggy conditions as small water droplets form on the conductor and corona starts to occur. This gradual onset of corona noise is not likely to cause any startle effect in animals. Indeed it is considered less likely to cause a startle effect than a passing vehicle, closing door/gate, distant shotgun blast, or vehicle horn all of which are sudden onset noise sources, common to the rural noise climate.

- 34 Noise from the construction phase of the project will be similar to any other construction site with regard to noise output, and should not cause any significant impact to livestock.

15.2.3 Concerns relating to Mitigation Measures

15.2.3.1 Construction Phase Noise and Vibration mitigation measures

35 A number of submissions state that the OHL will have an effect on horses and on farm animals; sheep, cattle etc. The submissions do not specifically state in most cases what the nature of this perceived impact is. The potential for impact to Land Use from the proposed development is assessed above in chapter 10 of this document.

Applicant's Response:

36 In regard to potential noise impact, there is no significant noise impact to animals predicted from the operational phase of the project, save from occasional noise from helicopter surveying of the completed OHL. This is described and assessed in the EIS, in both the Noise and Vibration chapters (Section 9.5.3, Volume 3C and Volume 3D) and Agronomy (Section 3.7.3, Volume 3C and Volume 3D) sections of the EIS. There is a protocol in place to minimise the impact of the annual low flying helicopter inspections on high sensitivity farms and if the land owner contacts ESB the fly over inspections can avoid, or inspections can be timed to suit, the land owner. Therefore the grazing, sleeping and exercise regimes of horses and other animals will not be affected by the proposed development.

37 Corona noise from the OHL will not have a sudden onset and will gradually become audible in rain or foggy conditions as small water droplets form on the conductor and corona starts to occur. This gradual onset of corona noise is not likely to cause any startle effect in animals. Indeed it is considered less likely to cause a startle effect than a passing vehicle, closing door/gate, distant shotgun blast, or vehicle horn all of which are sudden onset noise sources, common to the rural noise climate.

38 Noise from the construction phase of the project will be similar to any other construction site with regard to noise output, and should not cause any significant impact to livestock or horses.

39 Some submissions have raised concerns in relation to the fact that the noise and vibration chapter has not identified all locations where piling and/or rock breaking may be required and as such has not identified sufficient mitigation for this.

Applicant's Response:

40 Specific mitigation measures and target criterion values have been presented in the EIS for these activities. These activities, if required, at any specific location will be short term and transient. These works would be carried out in day time hours only and would be specifically screened from sensitive receptors by the use of portable noise screens as described in Table 6-1 of the Outline CEMP (Appendix 7.1 to Volume 3B of the EIS) and in Section 9.6.1 of Volume 3C & 3D of the EIS as required.

15.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

15.3.1 Monaghan County Council (SI-2015-0215)

41 Noise and Vibration assessment is referenced but no observation or comment is made. Councillor Bennett in the minutes appended to the Submission of the meeting stated: *"Noise from the overhead lines could have severe impact on people with noise sensitivity issues"*.

Applicant's Response:

42 Noise from the overhead lines has been assessed and these predicted levels are presented in Sections 9.5.2 of Volumes 3C & 3D of the EIS for construction phase and in Sections 9.5.3 of Volumes 3C & 3D of the EIS for operational phase. The potential operational phase noise levels have been predicted in both dry and wet conditions.

43 During standard conditions there will be no significant noise emission from the overhead lines. During wet conditions, corona noise may occur. This has been predicted using international standard methodologies and is not predicted to cause significant impact at sensitive receptors.

44 With regard to people with noise sensitivity issues, this needs to be considered on a case-by-case interest.

15.3.2 Meath County Council (SI-2015-0216)

45 The submission of Meath County Council refers to Air Quality & Climate in Section 6.9 Air Quality & Climate. This Section makes specific reference to Chapter 10 of the EIS referring to the fact that: *'The existing air quality in the study area is generally very good with low concentrations of pollutants.'*

46 With regard to potential impacts the submission states that *'As with the majority of large civil engineering projects , some emissions to air e.g. dust are inevitable during the construction phase, arising from construction activities , transport of materials and the use of plant and equipment. The proposed development is expected to have a net positive impact on reducing greenhouse gas emissions through facilitation of further development of renewable energy sources in a cost effective and efficient manner according to the EIS.'*

47 With regard to Mitigation Measures the submission states: *'The main potential for impact relates to dust emissions during the construction phase of the project. The most effective way to manage and prevent particulate release is through effective site management and control of the potential sources.'*

48 The Report prepared by the SEE in the Environment Section states the following in relation to Air Quality and Climate: *'The main impacts in term of air and climate change comes during the construction stage of the project where there is potential for dust generation, however, this is weather related and there are a number of dust suppression procedures that can be put in place. In terms of climate change the applicant should monitor and record vehicle and construction plant and equipment emissions to air. During operational stage there is scope for the project to have a positive impact on climate change as the*

interconnector will facilitate transfer of some electrical power generated through renewable resources'.

Applicants Response:

49 As outlined in the report of the SEE, Environment Section of Meath County Council submission, there are a number of dust suppression procedures that can be put in place and which were set out in the EIS (Volume 3C, Chapter 10, Section 10.6 Mitigation). With their implementation residual impacts will be insignificant.

50 With regard to the recording of actual construction vehicle and plant emissions to air, should this be conditioned as part of any permission from an Bord Pleanála, the Applicant will ensure that the contractor will maintain records of the following for each construction site:

- Equipment Type Used and number
- Equipment Model
- Model Year
- Activities undertaken
- Control technologies on equipment (e.g. such as catalytic converters)
- Fuel use data and type from Actual Purchase Records
- Distance travelled in km by equipment type
- Utilisation rate of equipment

51 This data will be used to calculate emission to air for CO₂, CO, NO_x, PM, HC and SO₂ using published emission factors. Monthly emission quantities can be provided to Meath County Council for each construction site as relevant.

15.3.3 Sinn Féin (SI-2015-0275)

52 The submission states *"We support the Council Planning observation "The Environmental Impact Statement (EIS) has failed to adequately address the impact of noise upon sensitive receptors in the vicinity of the development both during construction and operation"*

Applicant's Response:

53 No such observation has been found in the Meath, Monaghan or Cavan County Council submissions. Notwithstanding this fact, the description of the assessment of the noise and vibration impact assessments for both the construction and operational phases are presented above and are considered adequate to enable the Bord to assess the potential for impacts in this regard.

15.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

15.4.1 Electricity Association of Ireland (EAI) (SI-2015-0102)

54 The EAI submission fully supports the application by EirGrid noting that it is consistent with the objectives of the relevant County Development Plans. Specifically relating to Climate change the submission states as follows:

55 In item 2: *Absent this infrastructure, Northern Ireland will not be in a position to meet its target of 40% contribution from renewable electricity by 2020, with the resulting effect of having a significant impact on the energy policy of a neighbouring member state region.*

56 In Item 10: *Climate change presents a potential existential threat to humanity. EU and national policies look to transform the system of generation, supply and use of energy into a sustainable, decarbonised regime. Electricity and its associated infrastructure, has a key role to play in this transformation, for which the proposed development is a critical infrastructure component.*

57 As stated in the EIS (Volume 3C & 3D, Chapter 10, Section 10.1 Introduction, paragraph 4):

“The proposed development is expected to have a net positive impact on reducing greenhouse gas emissions through facilitation of further development of renewable energy sources in a cost effective and efficient manner. This will in turn displace energy production from fossil fuels with a consequent reduction in the emission of greenhouse gases, mainly carbon dioxide (CO₂), sulphur dioxide (SO₂) and nitrogen oxides (NO_x). It will also help towards reducing Ireland’s dependence on fossil fuels for energy production and underpin the achievement of Ireland’s agreed European Union (EU) targets with respect to greenhouse gas emissions and renewable energy”.

58 This is further stated in Volume 3C & 3D, Chapter 10, Section 10.7 Residual Impacts:

“The development will contribute positively to a long term residual impacts on greenhouse gas emissions as it will facilitate further development and connection of renewable energy sources thereby reducing the dependence on fossil fuels with consequent reduction in greenhouse emissions.”

59 It is also stated in Volume 3C & 3D, Chapter 10, Section 10.9 Conclusions:

“The proposed development will contribute positively to long term residual impacts on greenhouse gas emissions as it will facilitate further development and connection of renewable energy sources thereby reducing the dependence on fossil fuels with consequent reduction in greenhouse emissions.”

60 The submission of the Electricity Association of Ireland supports the conclusions of the EIS Chapter 10 with respect to climate change potential impacts of the project.

15.4.2 Receptors with Medical Conditions

61 Several submissions have made mention in relation to and on behalf of individual receptors with certain medical conditions that may pre-dispose them to a particular sensitivity to noise.

Applicant's Response:

62 The EIS sets out the potential noise and vibration impacts to sensitive receptors in the construction and operational phases of the development. This is achieved by characterisation of predicted noise levels at set distance from the noise source.

63 With regard to people with noise sensitivity issues due to a medical condition, this is a subjective issue and relates to the individual in question. The noise level observed by the receptor will remain unchanged, but people with particular sensitivity to noise may react to this same noise level differently than other people might react to the same source.
Potential Impact from Multiple Towers

64 Submissions have queried the noise impact from multiple towers on their lands in relation to noise impact during both the construction and operational phases.

Applicant's Response:

65 Construction phase noise and vibration impacts are evaluated and discussed above. As the construction of these towers is on a phased basis it is not predicted that significant potential will occur for cumulative noise and vibration impact from the erection of separate towers. Moreover, the towers are several hundred metres apart and the impact has been assessed for the case of construction of a tower at 50m from a sensitive receptor. Construction of subsequent towers would necessarily be further away from any single receptor location than 50m and as such would have a lesser potential for noise and vibration impact.

66 In the operational phase, noise levels have been predicted for sensitive receptors at 50m from a tower in worst case wet conditions, when the potential for corona noise is more likely to occur. As such, similar to the case of the construction phase, the physical separation of the towers each being hundreds of metres apart means that cumulative noise impact from towers is not considered likely for any single receptor location.

67 In addition the submission states that aeolian noise in high winds would compound this issue as the area in question is often subject to very windy conditions. Aeolian noise in high winds at distance from the tower will be masked by local foliage noise generated by the same high winds. In scenarios where this foliage noise is absent due to slackening winds, the masked aeolian noise will also be absent, for the same reason.

16 LANDSCAPE

16.1 OVERVIEW

- 1 Landscape was raised as an issue in approximately 697 no. of submissions/observations. These submissions are listed in Table 37 of **Appendix 1.2** of this report.

The topic of Landscape considers the potential for landscape and visual impacts arising from the proposed development. We have identified a number of recurring issues raised in the submissions. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 38 of **Appendix 1.2** of this report.

16.2 RESPONSE TO GENERAL ISSUES RAISED

- 2 The topic of Landscape and Visual Impact is evaluated in Volumes 3C & 3D, Chapter 11-Landscape of the EIS. Volume 3C and 3D Appendix 11.2 RVIA – Residential Visual Impact Assessment provides an assessment of the visual impact on individual dwellings. A number of submissions raise the same issues and have therefore been collated and categorised into general issues. Each general issue is identified below and addresses the issues raised by the observers with reference to the relevant EIS volume, chapter, section, appendix or figure.

16.2.1 Impact on Protected / Locally Significant Views

16.2.1.1 Protected Views

Cavan Monaghan Study Area (CMSA):

- 3 Volume 3C, Appendix 11.1, Table 11.18 sets out the residual visual impact on scenic views and routes recognised by the Monaghan County Development Plan within 5km of the proposed development, or up to 10km distance for elevated viewpoints. The location of the viewpoints is shown on Figures 11.3 - 11.10. All Protected Views are all acknowledged as being of High sensitivity. In accordance with best practice guidance, the magnitude of change in each view and resulting visual impact at construction and operation stages, are set out as well as an overall statement of impact significance.

- 4 Of the 13 no Protected Viewpoints assessed – twelve in Monaghan, one in Cavan - eight will experience no change, two will experience negligible visual impact (SV12 and SV14) and three will experience minor-moderate visual impact (SV21, SV22 and SV8 (in Cavan)). As no visual impact of moderate or higher has been identified, there are no significant impacts on Protected Views in Cavan or Monaghan, although SV21, SV22 in Monaghan and SV1 in Cavan will experience minor-moderate visual impact as defined in Appendix 11.8, Table 11.9. The nature of visibility of the proposed development from a selection of Protected Viewpoints and scenic routes are shown on Photomontages, 14, 19, 26, 27, and 41. The locations of these photomontages were agreed with the relevant planning authorities at scoping stage.

Meath Study Area (MSA)

- 5 Volume 3D, Appendix 11.1, Table 11.22 sets out the residual visual impact on scenic views recognised by the Meath County Development Plan within 5km of the proposed

development, or up to 10km distance for elevated viewpoints. The location of the viewpoints is shown on Figures 11.3 – 11.12. All Protected Views are acknowledged as being of High sensitivity. In accordance with best practice guidance (Landscape Institute, LI, and Institute of Environmental Management and Assessment, IEMA, (2013). Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, UK, Routledge), the magnitude of change in each view and resulting visual impact at construction and operation stages, are set out as well as an overall statement of impact significance. Of the nineteen scenic viewpoints assessed – eighteen in Meath, one in Cavan - twelve will experience no change, three will experience negligible visual impact (15, 44, 52) three will experience low visual impact (8 (in Cavan), 13, 17) and one will experience moderate visual impact (86).

- 6 Of the 19 no. protected views assessed, therefore, the impact on one protected view – no. 86 at Bective Bridge over the River Boyne - is considered significant. The nature of this visibility is shown on Photomontage 66. In terms of mitigation of this identified significant impact - Para 122 of Chapter 11 states that *“Where it has not been possible to avoid adverse effects on identified specific viewpoints, micro-mitigation is possible through the retention, enhancement or replanting of trees and hedgerows in key locations. This is specifically relevant in relation to the Boyne and Blackwater river crossings...”* The potential for partial undergrounding within the River Boyne Valley to mitigate this significant impact on protected view no. 86 is described in Volume 3B - Appendices (Appendix 5.1), and in particular in Section 8.1. It concludes that *“In relation to all the potential environmental impacts considered, with the exception of landscape, there is no preference for partial UGC over the OHL option for this Boyne Valley location. Furthermore the UGC option at the Boyne Valley would present greater potential risks (water, soils, hydrogeology) and create greater adverse impacts (traffic, ecology, cultural heritage) than OHL. In terms of visual impact, it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths of sensitive landscape locations such as the crossing of the Boyne. However, as stated in the Preferred Project Solution Report, the use of short lengths of UGC would only be considered in the event that an appropriate and acceptable OHL solution could not be found. This is considered to occur if Profound impacts, as defined in the EPA Guidelines, were predicted. A profound impact is defined in the Guidelines as one which “obliterates sensitive characteristics”.* The conclusion states also that *“In summary, there are no impacts of such significance envisaged, including those on landscape that would introduce the need for consideration of partial undergrounding for the proposed development at this location.”*
- 7 The nature of visibility from a selection of other Protected Viewpoints are shown on Photomontages 41, 45A, 47, 48C, 53A, 54, and 68. The locations of these photomontages were agreed with Meath County Council at scoping stage.

16.2.1.2 Locally Significant Views

CMSA and MSA

- 8 Locally significant views include views from roads of the landscape, views from walks, from and to designated landscape features, views from and to elevated locations, or views of places of heritage significance as well as views from settlements and private views from residences and gardens. The impacts on such views vary along the length of the line route, generally depend on proximity to tower structures (and also on the screening effects of intervening vegetation) and are described in Volumes 3C & 3D, Section 11.5.4 and in Volume 3C and 3D, Appendix 11.2 RVIA – Residential Visual Impact Assessment.

- 9 The impact on views from specific settlements, roads, recognised scenic views (which are often associated with heritage features), and key walking routes and drives are summarised in Volume 3C, Appendix 11.1, Table 11.18 and Volume 3D, Appendix 11.1, Table 11.22.
- 10 In general terms, the transmission line will be partially visible from houses and roads up to 1-1.5km of the line where there is no intervening vegetation or topography. Visual effects reduce with distance, with the most significant effects occurring within 600-800m of unscreened structures. The towers would be generally difficult to discern at distances beyond 800m but longer distance views are possible, as some towers are located on relatively elevated land. A house by house appraisal is contained in Volume 3C and 3D, Appendix 11.2 RVIA – Residential Visual Impact Assessment (RVIA). The RVIA is accompanied by Figures 1 - 35 indicating the location of each private dwelling within 500m to either side of the proposed development.

16.2.2 Impact on Dwellings

- 11 A Residential Visual Impact Assessment (RVIA) has been carried out and forms part of the planning application. The RVIA is accompanied by figures indicating the location of each private dwelling within 500m to either side of the proposed development. The assessment is contained in the following EIS documents:

Volume 3C and 3D, Appendix 11.2 RVIA (Residential Visual Impact Assessment):

1. Main Document: Residential Visual Impact Assessment
2. Figures: Figures 1-35

- 12 Generally, the transmission line will be partially visible from houses up to 1-1.5km of the line where there is no intervening vegetation or topography. Visual effects reduce with distance, with the most significant effects occurring within 600-800m of unscreened structures. The towers would be generally difficult to discern at distances beyond 800m but longer distance views are possible, as some towers are located on relatively elevated land.

16.2.3 Impact on Landscape Character and Visual Amenity

- 13 Over the full length of the proposed development, the residual unavoidable impacts will include adverse effects on landscape character and on unscreened views within 600-800m of the alignment. Some areas that are particularly flat or elevated in relation to the line will experience significant effects at distances up to 1km. These effects will be particularly noticeable where the transmission line crosses roads where hedgerows are low.
- 14 Potential landscape, visual and cumulative effects arising from the proposed development have been assessed in detail and are accompanied by photomontages and figures. The relevant documents included in the EIS are listed below:

Volume 3C (Cavan-Monaghan-Study Area – CMSA):

1. Main Document: Chapter 11 - Landscape
2. Appendices: Appendix 11.1 (CMSA) Landscape Tables
3. Figures: Figures 11.1 - 11.11 and Photomontages 1 – 42

Volume 3D (Meath Study Area – MSA):

1. Main Document: Chapter 11 - Landscape
2. Appendices: Appendix 11.1 (MSA) Landscape Tables
3. Figures: Figures 11.1 - 11.12 and Photomontages 41 – 77

Volume 3C and 3D Appendix 11.2 RVIA – Residential Visual Impact Assessment:

1. Main Document: Residential Visual Impact Assessment
2. Figures: Figures 1-35

Volume 3B:

Chapter 10 - Cumulative Impacts and Impact Interactions

16.2.3.1 Impact on Landscape Character

- 15 The agricultural landscape of Monaghan, Cavan and Meath is generally robust and has undergone continuous change including road and house building and introduction of utilities infrastructure while sustaining its underlying character and evident time depth. The scale of the proposed development will, however, result in significant alteration to the landscape character of areas in the near vicinity of the alignment – most noticeably at distances of up to 600-800m from the alignment.
- 16 Specific identified sensitive locations along the alignment which will experience residual landscape impact include; a plateau and valley close to the jurisdictional border with Northern Ireland including a section of the Monaghan Way, the setting the Fair of Muff, a scenic view east of Shantonagh, the vicinity of a number of small lakes, and most commonly, the locations where towers need to cross drumlins to avoid other constraints. Specific identified sensitive locations also include the Boyne River Valley at Bective, the Blackwater River Valley at Teltown and Brittas Estate. The potential for partial undergrounding to mitigate these significant impacts is described in Volume 3B - Appendices (Appendix 5.1).

16.2.3.2 Impact on Visual Amenity

- 17 Towers and associated infrastructure are dominant in close views (up to 500m) where there is no intervening vegetation or topography, where there are gaps or lower than average roadside vegetation or if they are located on higher ground.
- 18 At distances of 500m to 1km, towers are still noticeable in the context of a wider landscape. The screening capabilities of vegetation, buildings and topography however, become more effective. The towers are more conspicuous at these distances if sited on higher ground, if the viewing point is elevated or if the proposed development is seen against the sky.
- 19 Beyond 1km, it becomes difficult to discern the towers in the landscape and in most cases the towers are not visible at this distance. Towers are still however, distantly visible if seen traversing higher ground or over very flat ground where there is a gap in intervening vegetation.
- 20 A number of representative photomontages illustrate the nature of visibility at distances of up to 500m, at 500m to 1km and beyond 1km. These are shown and described in Volume

3C, Section 11.5.3.2 and Volume 3D, Section 11.5.3.2 and in the accompanying full scale Photomontages.

16.2.4 Impact on Drumlins / Elevated Sites

- 21 Elevated ground was a key constraint in the development of the line route corridors from both a technical and landscape perspective – and was avoided where possible as described in the North-South 400 kV Interconnection Development - Final Re-evaluation Report, EirGrid, April 2013, which is included as an Appendix of Volume 3B of the EIS. Volume 3B, Chapter 5 - Route Alternatives describes the assessment of various route alternatives in the progress of identification of the route alignment.
- 22 Where it has not been possible to avoid higher ground, due to other constraints limiting the availability of lower lying ground, the potential landscape and visual effects have been described for each relevant landscape character unit. The views from elevated sites have also been appraised within the 5km study area and elevated scenic viewpoints recognised in County Development Plans have been appraised up to a distance of 10km from the line route.
- 23 It is acknowledged in the landscape and visual impact assessment that the highest landscape and visual impacts occur where the towers cross higher ground, for example, within the Mullyash Uplands LCA, the drumlin tops of the Monaghan Drumlin Uplands LCA, the Ballybay Castleblaney Lakelands LCA and the Drumlin and Upland Farmland of South Monaghan LCA, as well the highlands of East Cavan. Within Meath, the line route generally maintains a lower lying route but crosses a number of drumlins within the North Meath Lakelands LCA, and crosses some higher land within the Tara Skryne Hills LCA at Bogganstown.

16.2.5 Number, Location, Orientation, Quality and Scope of Photomontages

- 24 A number of submissions consider the photomontages do not accurately demonstrate the visual impacts of the proposed development as they portray the proposed development from a too great distance, an inappropriate angles or have objects in the foreground to divert the eye such as wooden poles, wires, road signage and bushes.

Applicant's Response:

- 25 All photomontages have been produced to the current best practice guidelines:
- Landscape Institute, LI, and Institute of Environmental Management and Assessment, IEMA, (2013). Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, UK, Routledge;
 - Landscape Institute, LI, Advice Note 01/11 (2011). Photography and Photomontage in Landscape and Visual Impact Assessment, UK.
- 26 The photomontage locations were discussed and agreed with the relevant planning authorities at scoping stage and prior to completion of the Landscape and Visual Impact Assessment. Generally, viewpoints should be accessible to the public (refer to guidelines as stated above). Volumes 3C & 3D, Chapter 11, Section 11.2.8, set out in detail the approach to photomontage use, viewpoint selection and the use of photomontages in landscape and visual impact assessment.

- 27 Photomontages illustrate a range of likely effects, viewing experiences and viewers, ensuring that none are under- or over-represented. As the views are representative of viewing conditions that are encountered, some of them may show vegetation, telecommunication and other low voltage electricity infrastructure, road signs and other features partially screening the proposed development. Such features are normal and representative of the general landscape along or near public roads in Ireland. The exclusion of one or all of these features would not be representative of typical views experienced when travelling through the study area. Their scale, location and their relevance in terms of screening effects has been considered in the rating of the overall landscape and visual effects.
- 28 The Landscape Institute (UK) in its Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment published in 2011, on the subject states; —*The landscape professional should select a set of photographic viewpoints which are considered representative of the range of likely effects, viewing experience and viewpoints ensuring that none are under or over represented.*
- 29 It is possible to prepare detailed and highly realistic images that illustrate the likely future appearance of a development from a specific viewing point. However, the 2013 Landscape Institute GLVIA guidelines, Page 147, Paragraph 8.23 state the following: *“Visual representations can never be the same as the real experience of the change that is to take place. They are tools designed to assist all interested parties to understand how the change proposed will affect views at particular viewing points”*. It also states that *“It is therefore essential that not only should the development itself be represented fairly and accurately but that it should be capable of being understood within its landscape context”*.
- 30 Photomontages are useful for examining the effects from a limited number of critical viewpoint positions. However, they contribute little to an appraisal of the effects on the overall landscape within which an almost infinite number of potential viewpoints exist. There is no meaningful way to illustrate every view within a landscape. Instead, a representative sample of ‘worst case’ views are provided to assist the overall landscape and visual impact assessment. These include views from elevated areas, in very open landscape, where the alignment crosses higher ground, or at close distances. Many other locations within the study area will not experience any landscape or visual effects as a result of the proposed development. This is captured in the actual appraisal.
- 31 A significant limitation of visualisations is that the visual prominence of features in the landscape is significantly affected by lighting conditions and weather. Thus, for example, all views will appear different in various conditions of lighting, haze, weather and seasons.
- 32 The photomontages provided Volumes 3C & 3D, Figures, and shown at a smaller scale in the Chapter 11 of the EIS, are representative but not comprehensive – because in addition to there being an almost infinite number of viewpoints, there are a very large set of combinations and permutations of lighting conditions that could conceivably occur for every view. The Landscape Institute (UK) Guidelines (2011) in its Advice Note 01/11: Photography and Photomontage in Landscape and Visual Impact Assessment published in 2011, on the subject states; *“they (photomontages) are subject to the same inherent limitations as photographs, for example only showing the scene as it would appear under the same conditions that prevailed when the original photograph was captured.”*
- 33 Therefore, at best, visualisations can represent a view from a particular location at a particular time in particular weather conditions. There is no such thing as a fixed or single

impact on the appearance or character of the landscape. Photomontages do not show the effects of temporary hedgerow removal at construction stage, as this will be reinstated. The more permanent localised trimming or removal of taller vegetation within falling distance of any part of any OHL support or conductor is also not indicated.

34 The most effective use of photomontages is to view them in the field, The Landscape Institute (UK) in its Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment published in 2011, states; *"It is essential to recognise that two-dimensional photographic images and photomontages alone cannot capture or reflect the complexity underlying the visual experience, and should therefore be considered an approximation of the three-dimensional visual experiences that an observer would receive in the field."*

35 A full-scale set of photomontages, with technical details, is contained in Volume 3C and 3D, Figures. The detailed location and context of photomontage views are indicated on the mapping in Volume 3C, Figures 11.3 – 11.10, and Volume 3D, Figures 11.3 – 11.12 of the EIS. All photomontage locations are publically accessible. However, it is important to reiterate that the photomontages are not the visual impact assessment; they are a tool, in combination with the detailed landscape and visual appraisal contained in the EIS, to assist the assessment which will be undertaken by An Bord Pleanála.

16.2.6 General Reference to Mitigation Measures

36 As stated in Volumes 3C & 3D, Chapter 11, Section 11.6 – Mitigation Measures, the primary mitigation measure utilised in landscape terms was avoidance at route selection stage. The determination of the best route for an OHL including balancing and weighting of landscape constraints with constraints identified by other disciplines resulted in the avoidance of those parts of the landscape in the study area which are most sensitive to the landscape and visual effects of an OHL. This includes, where possible, higher ground and ridgelines, waterbodies, landscape designations and important scenic views. Best practice routing principles (refer to Volume 3B, Chapter 5, Section 5.4.2.1) also informed the line design process including measures to integrate the line within the landscape where possible. Further information on the evaluation of the route alignment is contained in the North-South 400 kV Interconnection Development - Final Re-evaluation Report, EirGrid, April 2013 included as an Appendix to Volume 3B of the EIS. Volume 3B, Chapter 5 - Route Alternatives describes the assessment of various route alternatives in the progress of identification of the route alignment.

37 Other landscape mitigation is described in Volume 3B, Chapter 11, Summary of Mitigation Measures. Micro landscape mitigation is possible through the retention or enhancement of trees and hedgerows in key locations, but the most significant mitigation measures relate to the protection of vegetation and soils during construction and the reestablishment of hedgerows post construction.

38 Flora and Fauna mitigation measures will serve to minimise physical landscape effects arising from disturbance to vegetation and soils. The key mitigation measures as described in the Flora and Fauna section in relation to landscape effects are; using existing access routes and gaps in hedgerows, reinstatement of hedgerows and ground vegetation (with similar or better quality planting), protection of retained vegetation, sensitive vegetation pruning methods including pollarding of mature trees to retain hedgerow lines, monitoring of vegetation establishment over 24 months, and replanting in the event of any

reinstatement failures. Hedgerows will be maintained to ensure no vegetation is tall enough to potentially interfere with the conductors.

- 39 The Soils, Geology and Hydrogeology mitigation measures will serve to minimise physical landscape effects on soil and subsequent vegetation establishment. The key mitigation measures as described in this section in relation to landscape effects are; correct removal, storage and reinstatement of subsoil and topsoil, avoidance of soil compaction and removal and disposal of soil where not required for reinstatement.
- 40 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1).

16.2.7 Reference to Alternatives / Undergrounding

- 41 The evaluation of route alignment options is contained the North-South 400 kV Interconnection Development - Final Re-evaluation Report, EirGrid, April 2013 included as an Appendix to Volume 3B of the EIS. Volume 3B, Chapter 5 - Route Alternatives describes the assessment of various route alternatives in the progress of identification of the route alignment. Opportunities for the use of partial undergrounding is described in detail in Volume 3B, Appendix 5.1, *The Potential for Partial Undergrounding of the Line to Mitigate Significant Impacts on Landscapes* (2015).

16.2.8 Impact on Specific Heritage / Protected Structures

- 42 The potential impacts on the setting of recognised and protected individual cultural heritage sites are appraised in Chapter 14 of Volumes 3C & 3D of the EIS. The landscape chapter appraises potential impact in the context of the broad cultural heritage contained within the landscape. It is concerned with the landscape character which has been created not only by natural forces but also by the patterns of human impact over the millennia, including agricultural patterns, the road network and remaining built structures or landscape features created by previous generations.
- 43 Volume 3C, Appendix 11.1, Table 11.18 and Volume 3D, Appendix 11.1, Table 11.22 set out the residual landscape impact on Historic Designed Landscapes with main features substantially present (as described in the NIAH Inventory of Gardens) within 5km of development. Brittas Estate is identified as the only designed landscape along the alignment which will experience moderate residual landscape impact which is deemed significant in accordance with the methodology set out in Volume 3D, Appendix 11.1, Table 11.8 Significance of Landscape Effects Matrix. The potential for partial undergrounding to mitigate this significant impact is described in Volume 3B - Appendices (Appendix 5.1).

16.2.9 Impact on Historic Gardens and Designed Landscapes

- 44 A number of submissions state the proposed transmission line route affects the landscape setting of a number of historic designed landscapes which are on the DAHG National Inventory of Historic Gardens and Designed Landscapes including: Whitewood (Nobber), Brittas (Nobber) and Cruicetown (Kells).

Applicant's Response:

- 45 The landscape and visual impact assessment contained in the volumes of the application documentation as listed above includes descriptions of the impact on the landscape setting of historic designed landscapes with main features substantially present and located within the study area. Volume 3D, Chapter 11 and Appendix 11.1 contain descriptions on Whitewood (Nobber), Brittas (Nobber) and Cruicetown (Kells). Table 11.22 lists the potential landscape and visual effects on these landscapes. Their location is shown on Figures 11.3-11.7.
- 46 Photomontages 45 (Whitewood Lough), 46 (Brittas), 47 and 47A (Cruicetown) illustrate the impact from publicly accessible locations only. The photomontage locations are indicated on Figures 11.4 (MSA) and 11.9 (MSA). The historic landscapes of Brittas and Whitewood are located on private land and access has not been granted to assess views from within these landscapes. The assessment was based on views available from public roads and aerial photography. It should also be noted that according to the desktop survey results of the DAHG National Inventory of Historic Gardens and Designed Landscapes, the main landscape features of Cruicetown House are unrecognisable with peripheral features visible. This is in contrast to Brittas and Whitewood, where the DAHG desktop survey results indicate that the landscapes features are substantially present.
- 47 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1).
- 48 **Potential impact on Brittas:** Volume 3D, Chapter 11, Appendix 11.1, Table 11.22 confirms that the landscape impact on Brittas will be significant.
- 49 Chapter 11, Section 11.5.4.2 states potential landscape effects within Landscape Unit F – North Meath Lakelands. It confirms that the line routing through Brittas Estate will require the removal of areas of mature woodland resulting in significant localised physical landscape impact. It also states that *“Towers 266 - 270 pass through Brittas Estate which is a recognised Historic Designed Landscape with —main features substantially present”. The line route avoids the central designed features of the demesne and passes through areas of mature and newly planted woodland. Approximately 1.1ha of mature woodland may be required to be removed to allow for a maximum 74m wide corridor. The landscape effects will be significant, as Brittas Estate is a relatively intact example of a designed landscape of the period. The line route runs parallel to the public road in this location, while the road is generally heavily vegetated, intermittent views into the estate are possible. The conductors would be visible crossing the entrance road as shown in Photomontage 46 and towers would be partially visible from the local road adjoining the estate in locations where boundary vegetation is thin. Most of the estate boundary with the public road is well vegetated. An on-site appraisal of the visual effects within the estate was not possible. The visual effects are therefore localised but significant.”* Photomontage 46 has been taken from a public road at the main estate entrance gate. Views from public roads along the boundary of the estate (western side) are lined with dense mature road side vegetation and mature vegetation located within the estate. Views into the estate from public roads are therefore limited to the main entrance gate. It is acknowledged that the impact from locations within the estate will be considerably higher.

16.2.10 Impact on Tourism

- 50 The potential impacts related to tourism are described in Chapter 4 Human Beings – Tourism and Amenity, and a response in respect of submissions arising is contained at Chapter 11 of this document. However, as tourism and the character of the landscape are closely aligned, the landscape chapter has also considered potential impacts on visitor appreciation of the landscape at key locations.
- 51 The OHL will be visible from some short sections (approximately 2km in total) of the Boyne Valley Driving Route, from Bective Bridge and within the Blackwater Valley. This may be perceived as reducing the attractiveness of these areas for tourism and amenity purposes, although the adverse effects are localised. The potential for partial undergrounding to mitigate these impacts is described in Volume 3B - Appendices (Appendix 5.1).
- 52 Volume 3D, Figures 11.3-11.7 of the EIS show the locations of sites of “Major Tourist Attractions, Secondary Tourist Attractions and Areas/Features with potential to be developed as a Tourist Attraction” as listed in the Meath Landscape Character Assessment. The alignment passes through an “Area with potential to be developed as a Tourist Attraction” at Donaghpatrick as listed in Map 18 of the MLCA.
- 53 The transmission line will be visible in conjunction with and from some specific views of above ground heritage structures in the vicinity of the river Blackwater crossing (See Cultural Heritage Chapter 19 of this report for more detail) and the transmission line will pass through the Teltown archaeological landscape which has been identified as an area of Potential Tourism Interest in the Meath County Landscape Character Assessment.
- 54 Landscape and Visual Impacts are also described in detail and illustrated by photomontages for the Hill of Tara, the River Boyne, Bective Abbey and bridge, the Monaghan Way, Lough an Leagh Mountain, Muff Fair and Lough Egish which are of visitor interest. Many other landscape features of potential interest to the visitor are described, and impacts are appraised along the entire line route.

16.2.11 Development in conflict with National Landscape Strategy for Ireland 2015-2025

- 55 A number of submissions consider the proposal to be contrary to the National Landscape Strategy for Ireland 2015-2025.

Applicant's Response:

- 56 The National Landscape Strategy (NLS) was launched in May 2015 and is to be implemented by the Government in the future. The NLS states that the “*National Landscape Strategy will be used to ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the landscape while positively managing its change. It will provide a high level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.*” It also states that “*The Strategy sets out Ireland’s high level objectives and actions with regard to landscape. It also positions landscape in the context of existing Irish and European strategies, policies and objectives, and outlines methods of ensuring co-operation at a sectoral and at a European level by the State.*”

- 57 The NLS contains no suggestion that the erection of towers, overhead lines, or any other infrastructure or development form in the landscape is against its objectives and actions. One of the actions of the NLS is the development of landscape policies, which will be implemented for the protection, management and planning of the landscape in all relevant sectors of public administration.
- 58 In addition, Action 5 (i) in Section 3.3 of the NLS states that it is planned to *“Prepare an inventory of all programmes and policies that have or may have a significant impact on landscape. Over the timescale of the Strategy, this inventory will be updated to reflect emerging policies.”*

16.2.12 Potential Cumulative Impacts

- 59 A number of submissions raise concerns in respect of the cumulative impact on the landscape arising from the proposed development in combination with existing transmission infrastructure and proposed developments (including windfarm developments). This is addressed comprehensively in Chapter 10, Volume 3B of the EIS. Specific references are provided below:

Applicant's Response:

- 60 **Existing 400 kV Infrastructure:** Volume 3D, Figures, Photomontages 75 and 77 illustrate cumulative landscape and visual effects where the proposed transmission line connects with the existing 400 kV OHL in the townland of Bogganstown. Chapter 11, Section 11.5.4.8 describes the potential landscape, visual and cumulative effects.
- 61 **Emlagh Wind Farm:** Volume 3B, Chapter 10, Section 10.4.7 addresses the landscape, visual and cumulative effects between the proposed transmission line development and the proposed Emlagh Wind Farm. Volume 3D, Chapter 11 and Figures contain photomontages illustrating the nature of cumulative effects (refer to Photomontages 48A, 48B, 48C, 49, 50, 50A, and 54). The photomontages cover an area between Towers 281 - 295.
- 62 **Ervey:** Volume 3D, Figures, Photomontage 43 illustrates cumulative landscape and visual effects where the proposed transmission line is seen in conjunction with the existing Flagford – Louth 220 kV transmission line within the townland of Ervey. Chapter 11, Section 11.5.4.2 describes the potential landscape and visual effects. A Residential Visual Impact Assessment (RVIA) stating the visual impact on individual dwellings in this area has been carried out and forms part of the planning application. The RVIA is accompanied by figures indicating the location of each private dwelling within 500m to either side of the proposed development. The assessment is contained in Volume 3C and 3D Appendix 11.2 RVIA – Residential Visual Impact Assessment.

16.2.13 Impact on Lakes

- 63 A number of submissions raise concerns in respect of the impact on the setting of non-seasonal lakes within the immediate vicinity of the proposed development namely:
- Lough Nahinch
 - Tassan Lough
 - Ghost Lough

- Drumgristin Lough
- Coogan's Lough
- Toome or Crinkill Lough
- Tonyscallon Lough
- Lough Egish
- Boraghy Lough
- Lough Morne
- Bocks Lough
- Shantonagh Lough
- Comertagh Lough

Specific references are provided below:

Applicant's Response:

- 64 The landscape and visual impact appraisal contained in Volume 3C, Chapter 11 – Landscape, includes an assessment of effects caused by the proposed development on the majority of the above listed lakes, their environs and other lakes in the vicinity. Each Landscape Unit traversed by the proposed transmission line states the impact on relevant lakes in proximity of the line or provides a statement on the impact on the general setting of lakes. This is supported by a number of photomontages from key lakes, where public access was possible. It should be noted that a number of lakes throughout the study area are not publicly accessible and views from public roads are restricted due to intervening vegetation and/or topography and/or other structures.
- 65 The following extracts of Chapter 11 (CMSA) include the descriptions of potential landscape and visual effects in direct reference to lakes and their environs within each landscape unit in County Monaghan. The location of each landscape unit is indicated on Figures 11.1 and 11.2 (Volume 3C).
- 66 Section 11.5.4.1, Landscape Unit A – Mullyash Uplands: Reference to Tassan Lough and Lough Nahinch:
- 67 The EIS states the following; *“Tassan Lough is located approximately 300m from the line route. Towers would be visible at close proximity to the lake, in views from the adjacent road. Therefore there would be localised significant visual effects. The current remote character of the small lake would be affected. The area around Lough Nahinch (located approximately 600m from the line route) is quite scrubby and therefore views are more enclosed.”*
- 68 Section 11.5.4.2, Landscape Unit B – Monaghan Drumlin Uplands: Reference to Coogan's Lough, Drumgristin Lough and Ghost Lough:
- 69 The EIS states the following; *“The alignment runs approximately 200-300m to the north of Coogan's Lough, Drumgristin Lough and Ghost Lough. An existing 110kV line crosses Coogan's Lough. There will be cumulative localised landscape effects on the settings of these Loughs.”*
- 70 Section 11.5.4.3, Landscape Unit C – Ballybay Castleblayney Lakelands: Reference to Tonyscallon Lough.

- 71 The EIS states the following; *“There would be no significant landscape effects on the setting of Lough Major at Ballybay or Tonyscallon Lough near Doohamlet”*. It also states that *“Parts of the towers may be visible briefly at a distance of 1km along with glimpsed views of Tonyscallon Lake when travelling along the R183. These, if discernible, would be seen in the context of a built up landscape with houses and existing powerlines and would not result in significant visual effects.”* Photomontage 17 illustrates a view across Lough Major at Ballybay in conjunction with the proposed transmission line.
- 72 Section 11.5.4.4, Landscape Unit D – Drumlin and Upland Farmland of South Monaghan: Reference to Lough Egish, Lough Toome, Shantonagh or Greaghlonge / Beagh Lough, Lough Boraghy, Lough Morne, Muff Lough and Bock’s Lough
- 73 The EIS states the following: *“There would be no significant landscape effects on the setting of the largest lake in the environs of the line route, Lough Egish, or on the setting of Lough Troome, Shantonagh or Greaghlonge / Beagh Lough. The transmission line will be experienced from the environs of the following smaller lakes; Lough Boraghy, Lough Morne, Muff Lough and Bock’s Lough (although this particular lake is well wooded).”* Photomontage 24 illustrates a view across Lough Morne and Photomontage 19 illustrates a view partially overlooking Lough Egish in conjunction with the proposed transmission line.
- 74 Comertagh Lough is located within Landscape Unit D – Drumlin and Upland Farmland of South Monaghan and in close proximity of Beagh Lough (as described above). The EIS Section 11.5.4.4 provides a detailed appraisal of landscape and visual effects throughout this landscape unit. While this lake is not specifically mentioned in the EIS Landscape chapter it can be concluded that the transmission line will be visible from the environs of this lake, similar to other lakes in close proximity and this part of the landscape unit as stated above. This conclusion is based on the information analysed for this landscape unit.
- 75 Section 11.9 – Conclusions, provides an overview of the general landscape and visual impact experienced at different distances throughout the study area. It is acknowledged that the most sensitive features of the area subject to this appraisal include the vicinity of lakes, which occur in lower lying areas. It is stated that *“Towers and associated infrastructure are dominant in close views (up to 500m) where there is no intervening vegetation or topography, where there are gaps or lower than average roadside vegetation, particularly if they are located on the higher parts of drumlins. At distances of 500m to 1km, towers are still noticeable in the context of a wider landscape. The screening capabilities of vegetation, buildings and topography however, become more effective. The towers are more conspicuous at these distances if sited on higher ground or if the viewing point is elevated, or if the proposed development is seen against the sky. Beyond 1km, it becomes difficult to discern the towers in the landscape, and in most cases the towers are not visible at this distance. Towers are still however, distantly visible if seen traversing higher ground or over very flat ground where there is a gap in intervening vegetation.”*
- 76 This final paragraph in this section also states that specific identified sensitive locations along the alignment which will experience residual unavoidable landscape and visual impact include, amongst others, the vicinity of small lakes and the locations where towers need to cross drumlins to avoid other constraints.
- 77 Please refer to the statements made in the previous response above in relation to the provision of mitigation measures.

- 78 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1).

16.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

16.3.1 Northern and Western Regional Assembly (SI-2015-0026)

- 79 The above submission requests consideration of the impact of the proposed development on the private open space of dwellings in the vicinity of the route.

Applicant's Response:

- 80 A Residential Visual Impact Assessment (RVIA) has been carried out and forms part of the planning application. The RVIA is accompanied by figures indicating the location of each private dwelling within 500m to either side of the proposed development. The appraisal is contained in the following EIS documents:

Volume 3C and 3D Appendix 11.2 RVIA – Residential Visual Impact Assessment:

1. Main Document: Residential Visual Impact Assessment
2. Figures: Figures 1-35

16.3.2 Department of Arts, Heritage and the Gaeltacht (SI-2015-0207)

- 81 The above submission requests further information in relation to the extent of visual impacts on the setting of archaeological monuments in the ownership or guardianship of the Minister for Arts, Heritage and the Gaeltacht. This includes additional photomontages for example from the Hill of Tara. It acknowledges that a photomontage has been produced from one location at the Hill of Tara (Volume 3D, No. 68) but it requests that views from other locations on the Hill of Tara are also to be modelled and assessed.

Applicant's Response:

- 82 The viewpoint for Photomontage 68 is located on top of one of the most prominent and elevated earthworks within the complex of the Hill of Tara and in close proximity of Lia Fáil. The panoramic view is orientated to the west and southwest towards the proposed transmission line development. Meath County Development Plan 2013-2019 lists the Hill of Tara as a designated protected panoramic viewpoint and prospect (Viewpoint 44) of national significance. It also states that views from the Hill of Tara are "*across settled landscape with visible development including foreground powerlines, agricultural buildings, houses, quarries and roads.*" It also states that views to the west contain "*other prominent hilltops visible at great distance*" and that the "*foreground contains extensive areas of hedgerows and woodland*".
- 83 Given the location, orientation and elevation of Photomontage 68, it is considered that it illustrates the most open view of the proposed development from within the Hill of Tara complex. The nearest tower will be located at 6.29km in the distance from this viewpoint. Volume 3D, Chapter 11 Landscape, Appendix 11.1 Tables – Landscape Evaluation MSA, Table 11.22 – Summary of residual visual effects, Page 22 states that the magnitude of change and the impact from the proposed development on Scenic Viewpoint 44 (Hill of Tara) is negligible and therefore not significant. Additional photomontages from the Hill of Tara, which would be equally open but generally less elevated, would not provide further

information for the assessment of potential impacts of the proposed development. It is important to note that photomontages are a tool to assist the landscape and visual impact assessment. The detailed appraisal of potential landscape and visual effects, including at the Hill of Tara is contained in the EIS.

- 84 Further information to queries raised in this submission is contained in **Chapter 19** (Cultural Heritage), of this report.

16.3.3 An Taisce (SI-2015-0209)

- 85 The submission raises a number of issues in relation to landscape and cumulative effects, many of these issues including potential impact on drumlin landscape, cumulative impact with Emlagh Windfarm etc. are addressed previously in this Response Report. Other issues are considered below.

16.3.3.1 Impact on River Valleys

- 86 The submission states that areas of particular sensitivity are affected, namely the crossing point of the River Blackwater near Donaghpatrick and the River Boyne to the west of Bective Bridge and Bective Abbey.

Applicant's Response:

- 87 The landscape and visual impact assessment contained in Volume 3D as listed in the response above contains descriptions of the impact on the valleys of the River Blackwater and River Boyne.
- 88 Photomontages 53, 53A and 55 - 59 illustrate the impact on the River Blackwater valley. The photomontage locations are indicated on Figures 11.5 (MSA) and 11.10 (MSA).
- 89 Photomontages 63 - 67A and 71 illustrate the impact on the River Boyne valley. The photomontage locations are indicated on Figures 11.6 (MSA) and 11.11 (MSA).
- 90 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1), and in particular in Sections 8.1 and 8.2. It is concluded that *"In terms of visual impact, it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths of sensitive landscape locations such as the crossing of the Boyne" and "Blackwater"*. It is also stated that *"In summary, there are no impacts of such significance envisaged, including those on landscape that would introduce the need for consideration of partial undergrounding for the proposed development"* at these locations.

16.3.4 Fáilte Ireland (SI-2015-0213)

- 91 The submission states that the landscape and visual impact assessment relates primarily to impacts on residential dwellings, and does not appropriately make the link or consider the impact on the landscape character of the area and its associated importance for tourism. It claims that tourism factors and in particular in relation to the landscape have been insufficiently developed in the appraisal. It is suggested that the potential impacts of the proposed development on tourism have therefore not been rigorously assessed.

Applicant's Response:

- 92 The landscape and visual impact appraisal contained in Volumes 3C, 3D and Volume 3C & 3D Appendix 11.2 assesses the following aspects located within the study area for County Monaghan, Cavan and Meath:
- Physical landscape effects on Landscape Units;
 - Landscape character effects in unscreened areas within 600-800m of the development;
 - Landscape effects on designated landscape features within the 5km study area and up to 10km where elevated;
 - Landscape effects on areas within 5km designated for ecological reasons that have potential amenity value;
 - Landscape effects on Historic Designed Landscapes with main features substantially present within 5km of the proposed development;
 - Residual visual effects on settlements within 5km of the proposed development;
 - Residual visual effects on transport corridors and paths within the 5km of the proposed development;
 - Views from unscreened individual properties;
 - Residual visual effects on scenic viewpoints within 5km of the proposed development and up to 10km for elevated viewpoints; and
 - Residential Visual Impact Assessment for all properties located within a 500m radius from the proposed development.
- 93 Volume 3D, Figures 11.3 - 11.7 indicate sites of “*Major Tourist Attractions, Secondary Tourist Attractions*” and “*Areas/Features with potential to be developed as a Tourist Attraction*” as listed in the Meath Landscape Character Assessment (Meath County Council 2007).
- 94 The interrelationship between environmental factors such as tourism, landscape and cultural heritage has been referenced in Volumes 3C & 3D, Chapter 11, Section 11.8. It is considered in greater detail in **Chapter 11** (Human Beings - Tourism and Amenity), of this report.

16.3.5 Cavan County Council (SI-2015-0214)

- 95 The submission of Cavan County Council reviewed the landscape and visual impact appraisal of the proposed development as described in detail in Volume 3C, Chapter 11 – Landscape, and Volume 3C & 3D Appendix 11.2 – Residential Visual Impact Assessment (RVIA). It raises concerns in relation to the potential visual impact from a number of towers.

16.3.5.1 Potential Visual Impact on Specific Residential Dwellings

- 96 The submission raises concern about the potential visual impact on residential dwelling CMSA R_187 caused by Angle -Tower 212 and requests to consider the re-siting to reduce any potential visual impact on the amenity of the existing dwelling. It also states that

Angle-Tower 217 is located too close to the residential dwellings and farm buildings CMSA B_142, CMSA R_201 (the submission states 102 but it should be 201) and CMSA R_199.

Applicant's Response:

97 The Residential Visual Impact Assessment (RVIA) contained in Volume 3C & 3D Appendix 11.2 analysed the impact on residential dwellings within 500m to either side of the proposed development.

98 **Dwelling CMSA_R_187:** Figure 12 of the RVIA indicates the location and impact rating of this dwelling. The property is located along the R162 and within an undulating landscape of mainly low lying drumlins in the eastern part of County Cavan. Page 25 of the RVIA report states that the impact on this dwelling caused by the proposed development will be moderate-major adverse and the magnitude of visual change is medium-high during the operational phase. Tower 212 (centre line of conductor) is located 74.8m from the house on elevated ground and will be partially screened by intervening vegetation.

99 The re-location of Tower 212 could be feasible as detailed in the response provided by route alignment specialists. However, while the distance to residence CMSA_R_187 may be increased, the overall visual impact due to the introduction of additional angle tower structures is likely to increase in the area.

100 **Dwellings CMSA B_142, CMSA R_102 and CMSA R_199:** Figure 13 of the RVIA indicates the location and impact rating of these dwellings. The properties are located along local road L7557 within an undulating landscape of mainly low lying drumlins in the eastern part of County Cavan. Dwelling CMSA_B_142 consists of a mix of commercial and residential buildings and is located closest to the proposed development of the three stated properties. The distances of each property to the proposed centre of the conductor of the transmission line are as follows:

- CMSA_B_142: 62.2m
- CMSA_R_201: 168.6m
- CMSA_R_199: 184.1m

101 Pages 25 and 26 of the RVIA report states the following visual impacts on these dwellings at operational stage caused by the proposed development:

- CMSA_B_142: High magnitude of visual change, major adverse visual impact
- CMSA_R_201: Medium magnitude of visual change, moderate adverse visual impact
- CMSA_R_199: Medium magnitude of visual change, moderate adverse visual impact

102 A further response in this matter is provided in **Chapter 5** (Alternatives), of this report.

16.3.5.2 Potential significant visual impact in the vicinity of Towers 225, 226, 227 and 228

103 The submission states there will be significant visual impact on the area in the vicinity of Towers 225, 226, 227 and 228. The area around the Muff Fair site and Muff Lough will experience particularly negative impact due to the proximity of the line and towers to existing residential houses and agricultural homesteads.

Applicant's Response:

- 104 Landscape and visual impacts, their significance and evaluation criteria are described in Volume 3C, Chapter 11, Section 11.2.5 as well as in Appendix 11.1, Tables 11.2 – 11.10. The magnitude of change and the resulting impact depends on the location within a specific area and on the type of the surrounding environs.
- 105 The Residential Visual Impact Assessment (RVIA) assesses the visual impact within 500m to either side of the proposed development. The location of dwellings located within the study area of the RVIA is indicated in Figure 14. The RVIA report describes the impact related to Towers 224-232 on Page 26 and lists these in Appendix 1 – Individual Property Assessment Tables, which forms part of the report at the end. The majority of houses within this area will experience either moderate adverse visual impacts and a medium magnitude of visual change or minor-moderate adverse visual impacts and a low magnitude of visual change at the operational phase of the project. Two properties will experience Moderate-Major adverse visual impact and a medium-high magnitude of visual change. One property will experience major adverse visual impacts and a high magnitude of visual change at the operational phase of the project. Volume 3C, Chapter 11, Appendix 11.1, Table 11.8 indicates that effects rated moderate and above are considered significant.
- 106 Volume 3C, Chapter 11, Section 11.9 states that *“Specific identified sensitive locations along the alignment which will experience residual unavoidable landscape and visual impact include; a plateau and valley close to the jurisdictional border with Northern Ireland including a section of the Monaghan Way, the setting the Fair of Muff, a scenic view east of Shantonagh, the vicinity of a number of small lakes, and most commonly, the locations where towers need to cross drumlins to avoid other constraints.”* Muff Lough is considered a small lake.
- 107 Volume 3C, Chapter 11, Section 11.4.3.5 states that the location of the long-standing annual Fair of Muff has moderate/high sensitivity as it attracts large numbers of people and cultural connections with the wider landscape. Photomontage 39 illustrates a view west from local road L7567 near the site of the Fair of Muff. The photomontage illustrates an open view and is described in Volume 3C, Chapter 11, Section 11.5.4.5.
- 108 Section 11.5.4.5 states that there will be changes to landscape character in the immediate vicinity of the line (within 600-800m of unscreened towers), but little alteration to the character of the wider landscape. It states further that there will be some landscape effects on the setting of Muff Lough. Photomontage 38 illustrates a view northwest from the junction of the R165 with local road L3532 in the townland of Cornaman, east of Muff Lough. The photomontage illustrates an open view and is described in Volume 3C, Chapter 11, Section 11.5.4.5.

16.3.6 Monaghan County Council (SI-2015-0215)**16.3.6.1 Impact of Towers on Ridges and Drumlins**

- 109 The submission raises concern about the location of towers on top or near to the crown of drumlins and sections of the line traversing significant ridges. It provides an assessment of each tower located in each relevant landscape character units in County Monaghan. The submission states that insufficient consideration has been given to the visual impact of the

development upon the landscape and the policies stated in Monaghan County Development Plan and Monaghan County Development Plan.

Applicant's Response:

- 110 Significant consideration has been given to the visual impact of the development upon the landscape throughout all stages of the evolution of the proposed development. Volume 3B, Chapter 5 - Route Alternatives, describes the assessment of various route alternatives in the progress of identification of the route alignment. The primary mitigation measure in landscape terms was avoidance at route selection stage. The determination of the best route for an OHL including balancing and weighting of landscape constraints with constraints identified by other disciplines (for example Soils, Geology and Hydrogeology, Flora and Fauna, Air – Noise and Vibration, Cultural Heritage and Human Beings – Tourism and Amenity) resulted in the avoidance of those parts of the landscape in the study area which are most sensitive to the landscape and visual effects of an OHL. This includes, where possible, higher ground and ridgelines, waterbodies, landscape designations and important scenic views. Best practice routing principles (refer to Section 5.4.2.1) also informed the line design process including measures to integrate the line within the landscape where possible. Further information on the evaluation of the route alignment is contained the North-South 400 kV Interconnection Development - Final Re-evaluation Report, EirGrid, April 2013 included as an Appendix to Volume 3B of the EIS.
- 111 The landscape and visual impact caused by individual towers or tower sets cannot be considered in isolation. Volume 3C, Chapter 11, Section 11.6., states the mitigation measures applied at design stage. The suggested re-location of individual towers to lower ground, around drumlins or away from other features particularly along currently straight sections of the line may be possible and reduce the visual impact of one or a few particular towers but can often result in visually significant knock-on effects in other adjoining areas due to the introduction of additional angle towers, the reduction of distance to dwellings, lakes, heritage and landscape features, the increase in road crossings and the impact on constraints identified by other disciplines.
- 112 Further details on the viability of routing around the contours and the other pinch- points listed in the Monaghan County Council submission are addressed in **Chapter 5** (Alternatives), of this report.

16.3.6.2 Location of Photomontages

- 113 The submission raises issues in relation to the location of some photomontages. It states that some views do not represent locations from where the development will be clearly visible from or visible over a wide area. It comments specifically on the following views:
- Photomontage 9: Taken at layby at N2, where an embankment partially obscures the view of the development
 - Photomontage 10: use of intervening road side vegetation to obscure views
 - Photomontage 19: taken at lower part of scenic route where visibility of the landscape and proposed development is restricted
 - Photomontage 35: taken at low point where visibility of the landscape and proposed development is restricted.

Applicant's Response:

- 114 A detailed response on the general viewpoint selection and production of photomontages is included in Section 16.2.5 above.
- 115 In reference to the above mentioned photomontages, please find a rationale on the viewpoint location below:
- 116 Photomontage 9: This viewpoint is located at a layby along the N2. The layby provides safe access for the photographer in this location in order to take images along the N2 dual carriageway in a south-eastern direction. Photomontage 8 provides an open view to the northwest along the N2 from the other side of the proposed transmission line.
- 117 Photomontage 10: Again, this viewpoint is located at a layby which provides a safe location for the photographer to take images. Clusters of road side vegetation are typical along this road. The wireframe image clearly indicates the location and orientation of towers within this view. While a number of towers are partially obscured in this view, the intervening vegetation does not influence the overall judgement of impacts caused by the proposed transmission line on the wider landscape.
- 118 Photomontage 19: This view is taken along a section of the Scenic Road, where safe access for the photographer was possible and where prolonged open views towards the development are available.
- 119 Photomontage 35: The viewpoint is located at a layby at the cross roads between the R162 and L8920. A viewpoint from a more elevated location along the R162 is provided in Photomontage 36.
- 120 It should be noted that a set of photomontage locations was issued for review to the planning authority in October 2013. Comments received from the planning authority have been discussed together with members of the authority. A representative selection of proposed additional viewpoints was selected based upon best practice guidelines and expert opinion, while ensuring the balance and uniformity of the overall number of viewpoints selected for photomontages across the entire study area of the project.

16.3.6.3 Legibility of Proposed Development in Photomontages

- 121 The submission states that the legibility of some of the proposed towers in Photomontages 6, 18, 19, 22, 23, 25, 26 and 27 is low and that it is expected that the towers would be more legible in the landscape including in views from scenic routes.

Applicant's Response:

- 122 As stated above, all EIS photomontages are produced according to best practice guidelines. Volume 3C, Chapter 11, Section 11.2.8 contains details about the viewpoint selection and photomontages in general. The lighting conditions in which the proposed development is illustrated was set digitally with specialist software according to the time of year, date, the time of day and prevailing weather conditions as accurately and as realistically as possible. However, the 2013 Landscape Institute GLVIA guidelines, Page 147, Paragraph 8.23 acknowledge that: *“Visual representations can never be the same as the real experience of the change that is to take place. They are tools designed to assist all interested parties to understand how the change proposed will affect views at particular viewing points. It is*

sometimes argued that the most suitable way to view photomontages is in the field where they can be compared with the real view”.

- 123 The photography of the above listed photomontages has been taken on a clear day with long distance visibility. The recognisability of towers depends on their setting within the landscape, and in particular if they are seen against the sky or the land. The tower visibility is generally greatest when seen against the sky. This effect is clearly shown in Photomontage 18, where the upper section of tower 146 can be seen clearly against the sky while tower 147 is seen fully against the land, which reduces its prominence in the overall view.
- 124 It should be noted that Photomontages 6, 19, 22, 23, 26 and 27 represent the development in longer or long distance views, which reduces the tower visibility naturally due to the effects of distance. Photomontage 6 has been taken from a Scenic Road and in the vicinity of Scenic Viewpoint 12. Photomontage 19 has also been taken from a Scenic Road in the vicinity of Scenic Viewpoint 21 as indicated in the County Monaghan Development Plan.
- 125 It should be noted that a set of photomontage locations was issued for review to the planning authority in October 2013. Comments received from the planning authority have been discussed together with members of the authority. As stated above, a representative selection of proposed additional viewpoints was selected based upon best practice guidelines and expert opinion, while ensuring the balance and uniformity of the overall number of viewpoints selected for photomontages across the entire study area of the project.

16.3.6.4 Photomontage Inaccuracies

- 126 The submission states that tower 170 is located in the wrong position in Photomontage 26.

Applicant's Response:

- 127 This comment on the inaccuracy of Photomontage 26 is based on a misinterpretation of the image. The image illustrates tower numbers 174 to 186. Tower 170 is located further to the left and therefore outside of this panoramic view.

16.3.6.5 Mitigation Measures to Lessen Visual Impact on Scenic Routes

- 128 The submission states that the visual impact on Scenic Routes SV 22 and SV 23 will be significant and the visual impact on Scenic Routes SV 12-14 and SV 21 will be moderate. It also states that the EIS does not indicate that necessary mitigation measures such as relocation or reduction in height of towers have been included to lessen the visual impact of the proposed development upon scenic routes SV 12-14, SV21, SV22 and SV23.

Applicant's Response:

- 129 Volume 3C, Appendix 11.1 (CMSA), Table 11.14 lists the relevant Scenic Routes and a description of each scenic view as stated in the Monaghan County Development Plan 2013-2019. Table 11.18 lists the potential landscape and visual effects and their significance on scenic viewpoint within 5km of the development and up to 10km for elevated viewpoints. The assessment states that the impact on scenic routes within the study area is not significant. Scenic Routes SV 13, 14 and 23 will experience no impact as the orientation of the scenic view is facing away from the proposed development. Photomontage 6 illustrates

a view from along SV 12, the visual impact is considered negligible. Photomontage 19 illustrates a view from SV21, the visual impact is considered Minor-Moderate. Photomontages 26 and 27 illustrate a view from SV 22, the visual impact is considered Minor-Moderate. Further details on the potential landscape and visual impact on scenic routes is described in the individual landscape unit assessments contained in Chapter 11, Sections 11.5.4.1 – 11.5.4.4.

- 130 With reference to the provision of mitigation measures, Volume 3B, Chapter 5 - Route Alternatives describes the assessment of various route alternatives in the progress of identification of the route alignment. As stated in Volume 3C, Chapter 11, Section 11.6 – Mitigation Measures, the primary mitigation measure in landscape terms was avoidance at route selection stage. The determination of the best route for an OHL including balancing and weighting of landscape constraints with constraints identified by other disciplines resulted in the avoidance of those parts of the landscape in the study area which are most sensitive to the landscape and visual effects of an OHL. This includes, where possible, higher ground and ridgelines, waterbodies, landscape designations and important scenic views. Best practice routing principles (refer to Volume 3B, Chapter 5, Section 5.4.2.1) also informed the line design process including measures to integrate the line within the landscape where possible. Further information on the evaluation of the route alignment is contained the North-South 400 kV Interconnection Development - Final Re-evaluation Report, EirGrid, April 2013 published on the EirGrid website.

16.3.6.6 Impact on lakes

- 131 A detailed response on the impact on lakes has been provided in Section 16.2.13 above.

16.3.6.7 Visual Impact on Angling Lakes

- 132 The submission raises concern about the impact on the visual amenity of angling lakes, namely Lough Egish and Lough Morne and the Castleblayney-Ballybay lakelands from the tourism perspective.

Applicant's Response:

- 133 A detailed response on the impact on lakes has been provided in Section 16.2.13 above.
- 134 Further details on the impact on tourism are included in **Chapter 11** (Human Beings - Tourism and Amenity), of this report.

16.3.6.8 Visual Impact on Walking Routes

- 135 The submission states that the proposed development will have a negative visual impact on the Monaghan Way on the section of the route in the Clontibret area.

Applicant's Response:

- 136 The Monaghan Way is described in Volume 3C, Chapter 11, Section 11.4.2.5. Photomontage 1 illustrates a view from the Monaghan Way in the vicinity of the Battle of Clontibret site. There will be no visual impact on the path in this location due to intervening vegetation and topography. The Zone of Theoretical Visibility (ZTV) mapped in Figure 11.7 (CMSA) shows when compared with the walking route alignment indicated on Figure 11.3 (CMSA) that visibility of the line will be limited to short elevated sections where

there is no or little intervening road side or way side vegetation northeast of Clontibret. It should be noted that ZTV mapping shows visibility considering a bare landscape without any vegetation or other built structures as stated in Section 11.2.7. The majority of impacts will be experienced southeast of Clontibret at Lemgare Rocks where the path passes under the proposed development.

- 137 Section 11.5.4.1 provides a detailed description of the potential landscape and visual impacts on sections of the Monaghan Way. Section 11.9 states that specific identified sensitive locations along the alignment which will experience residual unavoidable landscape and visual impact include, amongst others, a section of the Monaghan Way.

16.3.7 Meath County Council (SI-2015-0216)

16.3.7.1 Consideration of the Proposed Development in the National Context and with the National Landscape Strategy for Ireland 2015-2025

- 138 The submission states that the Heritage Officer considers the scale, extent and impact of the proposed development should be considered in a national context in particular within the development of a National Landscape Character Assessment as proposed in the National Landscape Strategy for Ireland 2015-2025.

Applicant's Response:

- 139 The National Landscape Strategy (NLS) for Ireland 2015-2025 was published in May 2015. The preparation of a National Landscape Character Assessment is one of the objectives of the NLS.

16.3.7.2 Assessment of Potential Cumulative Impacts with Proposed Wind Farm Developments

- 140 The submission states that the Heritage Officer considers that the proposed development must be considered within the cumulative impact in combination with Emlagh Wind Farm and Maighne Wind Farm. The potential cumulative impact of these developments and other large scale developments should be taken into account when assessing the Tara Complex.

Applicant's Response:

- 141 A description of the proposed Emlagh Wind Farm and Maighne Wind Farm projects is described in Volume 3B, Chapter 10 – Cumulative Impacts and Impact Interactions, Sections 10.3.2.1 and 10.3.2.2. The potential cumulative landscape and visual effects arising from the interaction with the proposed Emlagh Wind Farm is described in Section 10.4.7. Photomontages 48A, 48B, 48C, 49, 50, 50A and 54 included in Volume 3C, Figures illustrate the cumulative visual effects between the proposed transmission line and the proposed Emlagh Wind Farm.

- 142 There are no significant cumulative impacts expected to arise between Maighne Wind Farm and the proposed transmission line due to the distance of approximately 15.6km between the two developments. It is likely that the proposed transmission line and Maighne Wind Farm will be visible in combination from the Hill of Tara. The proposed Maighne wind turbines would become visible on the horizon. The proposed North-South Interconnector development would therefore be located between the viewpoint and

Maighne Wind Farm at 6.29km distance as shown in Photomontage 68, which illustrates the North-South development only and is included in Volume 3D, Figures. However, the long distance between Maighne Wind Farm and the North-South Interconnector means that the cumulative landscape and visual impact will not be significant.

- 143 A further response in relation to this submission is included in **Chapter 19** (Cultural Heritage), of this report.

16.3.7.3 Assessment of Designated Views by CAAS Ltd

- 144 Meath County Council engaged CAAS Ltd to assess all designated scenic viewpoints that are included in the County Development Plan. CAAS Ltd reviewed its assessment with the findings of the applicant. It concludes that the designated views no. 13, 15, 16, 17, 20, 44 and 86 are affected by the proposed development.

Applicant's Response:

- 145 Volume 3D, Chapter 11 – Landscape, includes the assessment of potential landscape and visual effects of the proposed development on designated viewpoints located in County Meath for each individual landscape character unit located within the study area. The detailed assessment is included in Sections 11.5.4.2 – 11.5.4.8. Section 11.9 provides a summary of potential impacts of the proposed development. A detailed assessment methodology including definitions on the determination of landscape and visual sensitivity, magnitude of change and a matrix on the significance of landscape effects are included in Appendix 11.1 (MSA), Tables 11.2 - 11.10. It should be noted that the significance matrix considers effects rated Moderate and above as significant.

Table 16.1: Comparison of designated viewpoint evaluations between CAAS Ltd and the Applicant - Viewpoints located within the study area of 5km (up to 10km for elevated viewpoints)

View No. (from CDP)	Location of viewpoint	Assessment of significance by CAAS Ltd	Assessment of impact by the applicant	Assessment of significance by the applicant	Photomontage provision by the applicant (PM no.)
13	Tower of Lloyd at Kells	Low	Minor-Moderate	Not significant	PM 54
15	County road between Carlanstown and Ardlonan	Low	Negligible	Not significant	PM 48C
16	County road to north of Moydorragh	Low	No impact	Not significant	None
17	County road between Mullagheven Cross Roads and Gorrays	Moderate/High	Minor-Moderate	Not significant	PM 47
18	County road between Mullystaghan and Robertstown	No effect	No impact	Not significant	PM 45A
19	Car park at Whitewood Lough	No effect	No impact	Not significant	PM 45
20	County road between Cormeen and Breaky Bridge	No effect	No impact	Not significant	None
21	County road between Milltown cross roads and Ervey cross roads	No effect	No impact	Not significant	None
40	On road to south Cannistown Chutch and M3	No effect	No impact	Not significant	None

View No. (from CDP)	Location of viewpoint	Assessment of significance by CAAS Ltd	Assessment of impact by the applicant	Assessment of significance by the applicant	Photomontage provision by the applicant (PM no.)
42	On county road between Bective and Ballinter cross roads	No effect	No impact	Not significant	None
44	Hill of Tara	High/Very High	Negligible	Not significant	PM 68
50	On R158 between Trim and Laracor	No effect	No impact	Not significant	None
52	Hill of Ward	No effect	Negligible	Not significant	None
77	View from Kileen Castle/Skane Valley from southeast direction of the Warrenstown college	No effect	No impact	Not significant	None
80	Blackwater Valley Navan from R147 Kells Road in the vicinity of Bloomsbury	Low	No impact	Not significant	PM 53A
85	Headford Bridge	No effect	No impact	Not significant	None
86	Bective Bridge	Moderate/High	Moderate	Significant	PM 66

146 Further to the table above. Appendix 11.1 (MSA), Table 11.13 lists and describes all relevant viewpoints located within the study area including their significance, location in the relevant landscape unit and proximity to the proposed transmission line. Table 11.22 provides a detailed summary of effects on each relevant viewpoint.

147 The assessment of designated viewpoints provided by CAAS Ltd offers a useful comparison to the applicant's assessment. In the most part it corroborates the applicant's findings with the exception of the potential impact on View no. 17 and 44.

148 **Designated Viewpoint 17** is located in the townland of Cruicetown and within Landscape Unit F – North Meath Lakelands, at a distance of 782m from the closest point of proposed development. Photomontage 47 illustrates the view from this location. As stated in Chapter 11, Section 11.5.3.4, it represents an open view from a higher part of a drumlin landscape. Section 11.5.3.7 states that four towers are visible, mainly against a background of hills, but the tops of two towers are visible on the skyline. The parts of towers seen against the land are difficult to discern at this distance. Section 11.5.4.2 provides a further assessment on this view stating *"A number of towers will be visible from the vicinity of VP 17 which is described as "expansive views to distant locations to north and to views of Carlingford, Mourne Mountains to the north-east. Highly varied topography. Woodland in lowlands" and is of regional importance. The nature of visibility of the proposed development is shown in Photomontage 47. This photomontage shows that, while four towers are partially visible and two are visible on the skyline, this is within the context of a complex rural landscape with screening provided by topography and vegetation. The expansive view available from this particular location will not be significantly affected by the proposed development."* Appendix 11.1, Table 11.22 lists in details the impact rating for this viewpoint.

149 The impact rating between the CAAS assessment and the applicant's own assessment are different but do not vary widely.

- 150 **Designated Viewpoint 44** is located within the Tara Complex and provides wide open panoramic views. This viewpoint is located within Landscape Unit L – Tara Skryne Hills and outside of the 5km study area but it has been included due to its elevation and available panoramic views. Section 11.4.3.7 states that the Tara Skryne Area is classified in the Meath Landscape Character Assessment (MLCA) as being of Exceptional value and National importance and is classed as having International importance in the Meath CDP. Exceptional value is defined in the MLCA as applying to *“areas which are of outstanding value by nature of their dramatic scenic quality, unspoilt beauty, and conservation interests, historic, cultural or other associations that influence landscape value.”* While this description is applicable to the publicly accessible summit of the Hill of Tara, it is considered that a value classification of Moderate is more applicable to the parts of the landscape unit that contains the line route. It also states that *“The landscape in this unit forms part of the cluster of low flat hills that includes the Hill of Tara. The flat nature of the surrounding landscape means that panoramic views are possible even from slightly elevated areas. The landscape is man-altered and made up of medium to large scale fields within a network of roads including three regional roads and hedgerows which generally limit views into the landscape. The R156 passes through this unit but is not crossed by the line route. The line route crosses the R125. There is an existing 220 kV and 400 kV electricity line in this landscape unit.”*
- 151 The viewpoint for Photomontage 68 is located on top of one of the most prominent and elevated earthworks within the Hill of Tara complex and in close proximity of Lia Fáil. The panoramic view is orientated to the west and southwest towards the proposed transmission line development. As stated in Appendix 11 (MSA), Table 11.22, the magnitude of change and impact caused by the proposed development is considered negligible and not significant. This is due to the distance of a minimum of 6.29km between the viewpoint and the closest point of the proposed transmission line. **Appendix 16.1** of this report provides the original Photomontage 68 and an image of Photomontage 68 highlighting in red circles the metal towers of the existing Gorman-Maynooth 220kV transmission line, which is located approximately 1.25km west, southwest in this view. 220kV lines as well as 400kV lines are entirely supported on galvanised lattice steel towers. While 220kV towers are often lower than 400kV towers, their general appearance is similar. The existing 220kV metal towers are barely discernible in this view at this distance. The proposed 400 kV development will be located approximately 4.5 to 5km further away from the existing 220kV line and will be seen entirely against the land, which will reduce the general visibility of this type of development significantly further.
- 152 The CAAS Ltd assessment describes the impact of the proposed development as *“High/Very High impact on a view of national significance and low sensitivity”*. The applicant does not agree with the findings of CAAS Ltd for this viewpoint. According to the definitions provided in Appendix 3 of the CAAS Ltd assessment High/Very High significance is described as follows: *“Change in dominance and intensity of characteristics or features over an extensive area ranging to intensive change to more limited area. Majority of viewers affected, major change to the majority of a protected view of considerable significance or sensitivity of all of a protected view.”*
- 153 Appendix 11.1 (MSA), Table 11.9 states the categories of landscape and visual significance. The applicant's assessment concludes that there will be no discernible improvement or deterioration in existing views from the Hill of Tara complex. The development is well designed to complement the scale and landform and pattern of the landscape. This conclusion is supported by Photomontage 68, which clearly shows the effects of distance and the visibility of the towers against the land. It also shows the visual presence and the

resulting impact of an existing 220kV line located approximately 1.25km from Viewpoint 44 (Please refer to **Appendix 16.1**).

16.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

16.4.1 Elected Members of Meath County Council (SI-2015-0002)

16.4.1.1 The Highest Significant Adverse Visual Impact will occur in County Meath.

154 This submission is accompanied by a document provided by the North East Pylon Pressure Committee (NEPP). The supplement provided by NEPP states that the highest significant adverse visual impact, according to the application, will occur in County Meath.

Applicant's Response:

155 The EIS landscape and visual impact assessment carried out for County Meath contained in the EIS in locations listed in the response above does not state that the highest significant visual impact will occur in County Meath.

16.4.1.2 NEPP Statements on the Significance of Effects

156 The supplement provided by NEPP states that *"There will be significant effects on the landscape character of unscreened locations up to 600-800m of the proposed NSI, along the entire length of the line route. There will be significant effects on views from unscreened individual properties up to a distance of approximately 600-800m from the proposed NSI. Residences within 500-600m of the line will experience significant visual impact where open views are possible. Where there is no intervening vegetation or topography, the NSI will be visible from houses and roads within 1-1.5km of the proposed development."*

Applicant's Response:

157 Volume 3D, Chapter 11 describes the landscape and visual effects in detail throughout the study area of County Meath. Section 11.9 – Conclusions, confirms the statement of this submission that the proposed development will significantly alter the landscape character and unscreened views at distances of up to 600-800m from the alignment.

158 Furthermore, Section 11.5.3.3 – Viewing distances of up to 500m; confirms that towers are dominant in close views where there is no intervening vegetation or topography, where there are gaps or lower than average roadside vegetation. This section provides also sample photomontages from viewpoints located within 500m.

159 Section 11.5.3.4 – Viewing distances of up to 500m - 1km, describes that towers are still noticeable in the context of a wider landscape. However, the screening effects of vegetation, buildings and topography become more apparent. This section provides also sample photomontages from viewpoints located within this viewing distance.

160 Section 11.5.3.5 – Viewing distances of 1 - 1.5km confirms the statement of this submission that the development will be visible within 1 – 1.5km of the proposed development. The section describes that towers will still be distantly visible if seen traversing higher ground or over very flat ground where there is a gap in intervening vegetation. This section provides sample photomontages from viewpoints located within this viewing distance.

16.4.1.3 Impact on Demesne Landscapes and Historic Gardens

161 The supplement provided by NEPP states that “Based on the National Inventory of Architectural Heritage garden survey and a review of historic mapping there were found to be 51 demesne landscapes and historic gardens in various states of preservation and scale within 2km of the proposed NSI. Of particular note, in close proximity to, or traversed by, the NSI are Ardracran, Brittas, Mountainstown, Gibstown, Teltown, Philpotstown, Rahood and Whitewood. The impact on one of these demesne landscapes, Brittas, was found to be significant and the planning includes the removal of mature woodland. A further 4 demesne sites will experience a moderate negative impact in terms of setting.”

Applicant's Response:

162 A detailed response on the impact on historic designed landscapes including Brittas has been provided in **Section 16.2.9** of this report.

16.4.1.4 Impact on Crossing Points at River Boyne and River Blackwater as well as along Boyne Valley Driving Route

163 The supplement provided by NEPP states that there will be significant localised effects at the crossing points of the River Boyne and the River Blackwater, as these locations are quite open and sensitive river valley landscapes. It states also that there will be significant effects on view from two sections of the Boyne River Valley Driving Route “west of Bective and south of Donaghpatrick as well as on a locally significant scenic view from Bective Bridge.”

Applicant's Response:

164 The landscape and visual impact assessment for County Meath is contained in the documents as stated in the response above. It includes descriptions of the landscape and visual impact on the valleys of the River Blackwater and the River Boyne as stated below:

165 Photomontages 53, 53A and 55 - 59 illustrate the impact on the River Blackwater valley. The photomontage locations are indicated on Figures 11.5 (MSA) and 11.10 (MSA). Photomontage 53A illustrates a view from the Boyne Valley Drive at Scenic Viewpoint 80 looking across the Blackwater River valley. Photomontage 55 illustrates a view of the transmission line in the direction of the River Blackwater following the crossing of the R147. Photomontage 56 illustrates a view northwest from Donaghpatrick Bridge in conjunction with the River Blackwater and Donaghpatrick Church. Chapter 11, Section 11.5.4.4 describes the landscape and visual effects on Landscape Unit H - Blackwater Valley.

166 Photomontages 63 - 67A and 71 illustrate the impact on the River Boyne valley. The photomontage locations are indicated on Figures 11.6 (MSA) and 11.11 (MSA). Photomontages 67 and 67A illustrate views from either side of the proposed transmission line traversing the Boyne Valley Drive. Photomontage 66 has been taken from Bective Bridge (Scenic Viewpoint 86) to illustrate the impact of the proposed development. Chapter 11, Section 11.5.4.6 describes the landscape and visual effects on Landscape Unit J - Boyne Valley.

167 Chapter 11, Appendix 11.1 (MSA), Table 11.22 – Summary of landscape and visual effects, lists the significance of impacts for the River Boyne and Blackwater. It confirms the

statement made in the supplement provided by NEPP that the impact will be significant. It also notes that the significance will be localised. Table 11.22 also lists the impacts and their significance for each scenic viewpoint located within the study. While the impact of the development will not be significant for the majority of viewpoints. The impact on Viewpoint 86 (Bective Bridge) is considered significant, which confirms the statement made in the supplement provided by NEPP.

168 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1), and in particular in Sections 8.1 and 8.2. It is concluded that *"In terms of visual impact, it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths of sensitive landscape locations such as the crossing of the Boyne" and "Blackwater"*. It is also stated that *"In summary, there are no impacts of such significance envisaged, including those on landscape that would introduce the need for consideration of partial undergrounding for the proposed development"* at these locations.

169 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1), and in particular in Sections 8.1 and 8.2. It is concluded that *"In terms of visual impact, it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths of sensitive landscape locations such as the crossing of the Boyne" and "Blackwater"*. It is also stated that *"In summary, there are no impacts of such significance envisaged, including those on landscape that would introduce the need for consideration of partial undergrounding for the proposed development"* at these locations.

16.4.2 Helen McEntee T.D. (SI-2015-0124)

16.4.3 Potential Impact on Cultural Heritage sites in County Meath

170 The submission raises concern about the visual impact of the development on cultural heritage and archaeological sites in County Meath, for example Donaghpatrick Church. It also states there will be an impact on Brittas Estate.

Applicant's Response:

171 Potential landscape, visual and cumulative effects arising from the proposed development within County Meath including relevant heritage sites have been evaluated in detail and are accompanied by photomontages and figures in Chapter 11, Volume 3D, while cumulative impacts are assessed in Chapter 10 of Volume 3B.

172 Photomontage 56 illustrates a view northwest from Donaghpatrick Bridge in conjunction with the River Blackwater and Donaghpatrick Church. Photomontage 57 illustrates a view west from the south-western boundary of Donaghpatrick Church and graveyard of the proposed development. Chapter 11, Section 11.5.4.4 describes the landscape and visual effects on Landscape Unit H - Blackwater Valley.

173 Chapter 11, Appendix 11.1 (MSA), Table 11.20 contains a list of historic designed landscapes with main features substantially present, which are located with the study area of County Meath.

174 Table 11.22 - Summary of landscape and visual effects contains a list of landscape effects on historic designed landscapes with main features substantially present within 5km of the

development. It confirms that the landscape impact on Brittas Estate will be significant. Chapter 11, Section 11.5.4.2 describes the potential landscape effects within Landscape Unit F – North Meath Lakelands. In relation to Brittas it states *“Towers 266 - 270 pass through Brittas Estate which is a recognised Historic Designed Landscape with —main features substantially present”. The line route avoids the central designed features of the demesne and passes through areas of mature and newly planted woodland. Approximately 1.1ha of mature woodland may be required to be removed to allow for a maximum 74m wide corridor. The landscape effects will be significant, as Brittas Estate is a relatively intact example of a designed landscape of the period. The line route runs parallel to the public road in this location, while the road is generally heavily vegetated, intermittent views into the estate are possible. The conductors would be visible crossing the entrance road as shown in Photomontage 46 and towers would be partially visible from the local road adjoining the estate in locations where boundary vegetation is thin. Most of the estate boundary with the public road is well vegetated. An on-site appraisal of the visual effects within the estate was not possible. The visual effects are therefore localised but significant.”*

175 Chapter 11, Appendix 11.1 (MSA), Table 11.22 – Summary of landscape and visual effects, lists the significance of impacts for Brittas Estate and Donaghpatrick.

176 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1). It concludes that it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths in the sensitive locations such as the crossing of the River Blackwater and at Brittas Demesne. However, there are no impacts of such significance envisaged, including those on landscape, which would introduce the need for consideration of partial undergrounding for the proposed development at the locations of the River Blackwater and Brittas Demesne.

16.4.4 Maria and Philip Fitzpatrick (SI-2015-0147)

16.4.4.1 Illustration of Clearance Underneath the Transmission Line in Photomontages

177 The submission states that photomontages produced for the area relevant to the individuals (Lemgare) do not show the clearance underneath the proposed transmission line.

Applicant's Response:

178 The submission does not state to which photomontages this statement refers. However, Photomontages 2, 3 and 5 are located within the area of the townland of Lemgare. Generally, the clearance of vegetation has been included in photomontages where relevant. It was not required for these 3 photomontages due to the location and angle of the panoramic views and the location of the transmission line in these views.

16.4.5 County Monaghan Anti-Pylon Committee (SI-2015-0278)

179 The submission states that many photomontages do not accurately demonstrate the visual impacts as they portray the proposed development from too great a distance, an inappropriate angle or have objects in the foreground to divert the eye such as wooden

poles, wires, road signage and bushes. Particular references are made in relation to Photomontages 4, 10, 21 and 31.

Applicant's Response:

180 A detailed response on the general viewpoint selection and production of photomontages is included in Section 16.2.5 above.

181 In reference to comments made about Photomontage 4, the camera level for all photographs used in photomontages was set at 1.6m above ground as stated on each photomontage sheet. This provides consistency across all photomontages and complies with current best practice guidelines. In this particular view, hedgerows on either side of this road are a typical feature along the majority of this road. A gap in the hedgerow as a photomontage location would therefore not be representative of views experienced along this road.

16.4.5.1 Impact on Lakes

182 A detailed response on the impact on lakes has been provided in Section 16.2.13 above.

16.4.5.2 Impacts in relation to Statements made in the County Monaghan Landscape Character Assessment and Elsewhere

183 The submission refers to statements made in the County Monaghan Landscape Character Assessment. These relate to high voltage powerlines and the drumlin landscape. It also includes quotes taken from the following website: <http://www.askaboutireland.ie/>, which includes comments on the unique character of the County Monaghan drumlin landscape.

Applicant's Response:

184 The County Monaghan Landscape Character Assessment formed the base of the assessment of the study area located within County Monaghan. This is stated in Volume 3C, Chapter 11 - Landscape (CMSA), Section 11.2.6. The CMSA landscape appraisal, Chapter 11, assessed in detail the potential landscape and visual impact for each landscape character unit and provides photomontages at representative viewpoints at various distances throughout the study area to illustrate effects resulting from the proposed development within the local and wider landscape setting.

16.4.6 North East Pylon Pressure (NEPP) (SI-2015-0332)

16.4.6.1 Impact on Vistas from Trim Castle, Bective Abbey and the Hill of Tara

185 The submission states that the vistas from Trim Castle, Bective Abbey and the Hill of Tara will be substantially impacted upon.

Applicant's Response:

186 The landscape and visual impacts on the above sites has been illustrated in the following photomontages:

- Photomontages 64 and 65: Bective Abbey – Significant Impact

- Photomontage 68: Hill of Tara (at Lia Fáil) – No significant impact
- Photomontage 71: Battlements of Trim Castle – No significant impact

- 187 Volume 3D, Chapter 11, Section 11.5.4.6 describes the potential landscape and visual effects on Trim Castle and Bective Abbey. Sections 11.4.3.4 and 11.5.4.8 describe the setting of the Hill of Tara and the likely impact. Appendix 11.1 (MSA), Table 11.22 provides a summary of landscape and visual impacts on the above mentioned location. Please note that the views from the Hill of Tara relate to Scenic Viewpoint 44.
- 188 A further response in relation to this submission is included in **Chapter 11** (Human Beings Tourism and Amenity), of this report.

16.4.6.2 Provision of Additional Photomontages

- 189 The submission provides a number of photomontages produced by NEPP and compares them with photomontages produced by the applicant (Photomontages 52, 60 and 73) and claim that residences have been omitted from viewpoints or viewpoints have been selected away from residences. It also states that intervening vegetation has been used to screen turbines of the proposed Emlagh Wind Farm (reference to Photomontages 48A and 50).

Applicant's Response:

- 190 A detailed response on the general viewpoint selection and production of photomontages is included in Section 16.2.5 above.
- 191 In addition, this submission provides illustrations from additional viewpoints which support the overall conclusions of the landscape and visual impact assessment contained in Volumes 3C & 3D, Chapter 11 – Landscape, Section 11.9. However, the rendering of the development in the additional images provided does not appear to be fully accurate or to comply with established best practice standards. The illustration of the proposed galvanised steel towers (particularly the colour and thickness of lattice structures) appears exaggerated and seems to ignore the effects of distance, which would naturally reduce the thickness of lattice structures and the intensity of colour.
- 192 In reference to photomontages illustrating the proposed Emlagh Wind Farm in conjunction with the proposed transmission line development, the inclusion of intervening vegetation, telecommunication and electricity infrastructure, road signs and other features are common parts of the general landscape along or near public roads in Ireland. The exclusion of one or all of these features would not be representative of typical views experienced when travelling through the study area. Photomontages 48A, 48B, 48C, 49, 50, 50A and 54 included in Volume 3D, Figures, illustrate the cumulative visual effects between the proposed transmission line and the proposed Emlagh Wind Farm from a number of locations in different settings.
- 193 The EIS photomontages have also provided a tool to assist the Residential Visual Impact Assessment (RVIA). The RIVA provides information on the visual impact on each dwelling in close proximity to the line (up to 500m to either side of the proposed development).

16.4.6.3 Impact on Historic Designed Landscapes

194 The submission states that there will be significant negative impacts on the landscape character of the following historic designed landscapes: Brittas, Mountainstown, Philpotstown, Galtrim, Ardbracon, Churchtown, Whitewood, Dowdstown and Culmullin. It also states extracts of the overall conclusions of the landscape and visual impact assessment.

Applicant's Response:

195 Volume 3D, Chapter 11, Section 11.4.2.9 lists the above named landscapes. Sections 11.5.4.2 – 11.5.4.8 contain descriptions of the potential landscape and visual impact on these landscapes where relevant. These historic designed landscapes and others located within the study area are set out in Appendix 11.1, Table 11.20 of the EIS along with their description of condition. Table 11.22 lists the potential landscape and visual effects on these landscapes. Their locations are shown on Figures 11.3-11.7 (Volume 3D, Figures).

196 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1).

16.4.7 North East Pylon Pressure (NEPP) (SI-2015-0332 – Appendix 13)

16.4.7.1 Potential Impact on Brittas

197 A submission by Brittas Estate Ltd has been enclosed in Appendix 13 of the NEPP submission. It states that the setting of the demesne landscape will be significantly and permanently impacted by the proposed development.

Applicant's Response:

198 Volume 3D, Chapter 11, Appendix 11.1 (MSA), Table 11.20 contains a list of historic designed landscapes with main features substantially present, which are located within the study area of County Meath. Table 11.22 - Summary of landscape and visual effects contains a list of landscape effects on historic designed landscapes with main features substantially present within 5km of the development. It confirms that the landscape impact on Brittas Estate will be significant.

199 Chapter 11, Section 11.5.4.2 describes the potential landscape effects within Landscape Unit F – North Meath Lakelands. In relation to Brittas Estate it describes that “*Towers 266 - 270 pass through Brittas Estate which is a recognised Historic Designed Landscape with –main features substantially present–. The line route avoids the central designed features of the demesne and passes through areas of mature and newly planted woodland. Approximately 1.1ha of mature woodland may be required to be removed to allow for a maximum 74m wide corridor. The landscape effects will be significant, as Brittas Estate is a relatively intact example of a designed landscape of the period. The line route runs parallel to the public road in this location, while the road is generally heavily vegetated, intermittent views into the estate are possible. The conductors would be visible crossing the entrance road as shown in Photomontage 46 and towers would be partially visible from the local road adjoining the estate in locations where boundary vegetation is thin. Most of the estate boundary with the public road is well vegetated. An on-site appraisal of the visual effects within the estate was not possible. The visual effects are therefore localised but significant*”. Photomontage 46 has been taken from a public road at the main estate

entrance gate. Views from public roads along the boundary of the estate (western side) are lined with dense mature road side vegetation and mature vegetation located within the estate. Views into the estate from public roads are therefore limited to the main entrance gate. It is acknowledged that the impact from locations within the estate will be considerably higher.

- 200 Section 11.5.4.9 states also that the *“main physical landscape effects arise from the need for the removal of vegetation. The degree of tree lopping, trimming and removal will depend on a number of factors including tower height, closeness of hedgerow and towers and the lowest point of the conductor sag and topography. Areas where the line route passes through woodland will require the removal of an up to 74m swathe of trees. This will have the most impact within the Brittas Estate, but also at other less significant and intermittent locations along the route (described in detail in Chapter 6 of this volume of the EIS)”*.
- 201 Section 11.9 – Conclusions, state that *“Specific identified sensitive locations along the alignment which will experience residual unavoidable impact include Brittas Estate ...”* and others.
- 202 A Residential Visual Impact Assessment (RVIA) has been carried out and forms part of the planning application, and it is included in Volume 3C and 3D, Appendix 11.2 RVIA – Residential Visual Impact Assessment. Section 2.1 states that *“Where it has not been possible to access physically or visually a particular property or properties, a worst case assessment is assumed (e.g. ground floor windows in the direction of the line, no screening vegetation).”* The RVIA is accompanied by figures indicating the location of each private dwelling within 500m to either side of the proposed development.
- 203 The *Final Re-evaluation Report* (2013) included in Volume 3B, Appendix 1.2 of the EIS appraised alternative OHL route corridor options. It includes an alternative OHL route option which was located west and outside of Brittas Demesne. Following the assessment and ranking of constraints of all disciplines, the current route corridor, which crosses Brittas Demesne, emerged as the preferred corridor option.
- 204 The potential for partial undergrounding to mitigate significant impacts is described in detail in Volume 3B - Appendices (Appendix 5.1), which appraises 3 UGC route options (4A, 4B and 4C) for Brittas Demesne. It concludes that *“There is a minor preference for partial UGC Route 4C over the OHL option proposed for the Brittas Demesne only in relation to landscape. There is also a limited justification for partial UGC over the OHL in relation to cultural heritage and ecology. The UGC option at Brittas would present greater potential risks (soils, water and hydrogeology) and create greater adverse impacts (agronomy and traffic) than OHL.*
- 205 *In terms of visual impact, it is acknowledged that removing towers from views would reduce the extent of visibility of the proposed development in short lengths in the sensitive landscape location at Brittas Demesne.*
- 206 *However, as outlined in Section 8.2.8 of the report titled, ‘The Potential for Partial Undergrounding of the Line to Mitigate Significant Impacts on Landscapes’, to which to this Annex 7 is appended, and as stated in the Preferred Project Solution Report (July 2013), the use of short lengths of UGC would only be considered in the event that an appropriate and acceptable OHL solution could not be found, which is considered to occur if Profound impacts, as defined in the Environmental Protection Agency (EPA) Guidelines, were*

predicted. However, as a consequence of the route selection employed, as outlined in that section noted above, Section 8.2.8, the proposed OHL, does not result in effects of this magnitude at the location of the Brittas Demesne and therefore there is no critical need for partial UGC along the route at this location.

207 *In summary, there are no impacts of such significance envisaged, including those on landscape, which would introduce the need for consideration of partial undergrounding for the proposed development at the location of the Brittas Demesne."*

208 A further response in relation to this submission is included in **Chapter 19** (Cultural Heritage), of this report.

16.4.8 North East Pylon Pressure (NEPP) (SI-2015-0332 – Appendix 14)

16.4.8.1 Potential Impact on Whitewood House

209 A submission by David and Damhnait Horgan has been enclosed in Appendix 14 of the NEPP submission. It states that the proposed transmission line would have a detrimental visual impact on Whitewood House and demesne.

Applicant's Response:

210 Volume 3D, Chapter 11, Appendix 11.1 (MSA), Table 11.20 contains a list of historic designed landscapes with main features substantially present, which are located within the study area of County Meath. Table 11.22 - Summary of landscape and visual effects contains a list of landscape effects on historic designed landscapes with main features substantially present within 5km of the development. It states that the landscape impact on Whitewood House and demesne will not be significant.

211 Chapter 11, Section 11.5.4.2 describes the potential landscape effects within Landscape Unit F – North Meath Lakelands. In relation to Whitewood House it describes that there would be no significant effects on the physical character or setting of these recognised landscape features due to the distance between Whitewood House and the proposed development. The alignment will be visible from the Estate House at Whitewood in the context of an inhabited rural landscape.

212 Photomontage 45 has been taken at designated viewpoint SV 19, which has been listed in Appendix 11.1, Table 11.13. The view is orientated east across Whitewood lake, woodland and Whitewood House. However, the proposed development is located opposite and to the west of this location and will not, therefore, impact on the designated view. An on-site appraisal of the visual effects within the estate and of views across the lake of the proposed development was not possible. Representative viewpoints from public roads are not available for Whitewood House.

213 A Residential Visual Impact Assessment (RVIA) has been carried out and forms part of the planning application, and it is included in Volume 3C and 3D, Appendix 11.2 RVIA – Residential Visual Impact Assessment. Section 2.1 states that "*Where it has not been possible to access physically or visually a particular property or properties, a worst case assessment is assumed (e.g. ground floor windows in the direction of the line, no screening vegetation).*" The RVIA is accompanied by figures indicating the location of each private dwelling within 500m to either side of the proposed development.

- 214 This submission provides photographs of views west at ground level and presumably upper floor windows. It also provides an illustrative photomontage of the proposed transmission line from a viewpoint presumably taken from an upper window facing west, southwest. These images from additional viewpoints support the overall conclusions of the landscape and visual impact assessment contained in Volume 3D, Chapter 11, Section 11.9 - Conclusions. However, the rendering of the development in the illustrative photomontage provided does not appear to be fully accurate or to comply with established best practice standards. The illustration of the proposed galvanised steel towers (particularly the colour and thickness of lattice structures) appears exaggerated and seems to ignore the effects of distance, which would naturally reduce the thickness of lattice structures and the intensity of colour.
- 215 A further response in relation to this submission is included in **Chapter 19** (Cultural Heritage), of this report.

16.4.9 Braccanby Irish Farm LLC (SI-2015-0336)

16.4.9.1 Potential Impact on Ardracchan House

- 216 The submission states that a number of towers running along the western boundary will be highly visible from the house and demesne lands and will significantly intrude on this protected landscape. The development will visually dominate the 18th century landscape.

Applicant's Response:

- 217 Volume 3D, Chapter 11, Appendix 11.1 (MSA), Table 11.20 contains a list of historic designed landscapes with main features substantially present, which are located within the study area of County Meath including Ardracchan House and demesne. Table 11.22 - Summary of landscape and visual effects contains a list of landscape effects on historic designed landscapes with main features substantially present within 5km of the development. It states that the landscape impact on Ardracchan House and demesne will not be significant.
- 218 Photomontage 60 illustrates an open view taken from the bridge crossing the motorway M3, which is located approximately 260-300m west of the boundary of Ardracchan demesne, and lies between the demesne and the proposed development. The proposed development is located 529m west from this viewpoint location at its closest. Ardracchan House and demesne is located approximately 600m from the proposed transmission line route. Chapter 11, Section 11.4.3.4 describes in detail the characteristics of Landscape Unit I – West Navan Lowlands, which includes Ardracchan demesne. Section 11.5.4.5 describes the potential landscape and visual impacts which will be experienced within this landscape unit.
- 219 A further response in relation to impacts on Ardracchan House is included in **Chapter 19** (Cultural Heritage), of this report.

16.4.10 Meath Archaeological and Historical Society (SI-2015-0337)

16.4.10.1 Use of LiDAR

220 The submission states that photomontages should be supported with LiDAR 3D studies to ascertain the visibility of the transmission towers. It requests that LiDAR studies are to be undertaken for tower locations 301-312 (Teltown) and 262-271 (townlands of Brittas, Cruicetown, Rahood and Raffin). The submission makes a particular reference to deficiencies of photomontages provided at an enquiry for the N2 Slane Bypass.

Applicant's Response:

221 The submission does not state what were the purported deficiencies of the photomontages presented at the N2 Slane Bypass hearing or the standards these photomontages were produced. This is not a matter for conclusion by the Applicant in respect of this proposed development. In any event, all photomontages contained in the landscape and visual impact appraisal in this proposed development have been produced to the current best practice guidelines as detailed previously.

222 Volume 3D, Chapter 11, Section 11.2.8 contains details about the viewpoint selection and photomontages in general. Photomontages have been produced from viewpoints, which are representative of the character of the location, nature of visibility at various distances and in various contexts. Viewpoint locations are also selected to be suitable for the photomontage process, including legal and safe access to the point of taking photographs and surveying. Furthermore, the photomontage locations have been discussed and agreed with County Meath at scoping stage and prior to completion of the Landscape and Visual Impact Assessment.

223 LiDAR information is useful but not essential to inform the landscape and visual impact assessment. As with photomontages, LiDAR information provides a tool to assist the assessment of potential landscape and visual effects. Volume 3C and 3D Appendix 11.2 RVIA – Residential Visual Impact Assessment, Section 2.1 states, that where it has not been possible to access physically or visually a particular property or properties, a worst case scenario is assumed.

224 A range of photomontages have been produced for the Teltown Area capturing Towers 301-312 and others, namely Photomontages 51, 52, 53, 55, 56, 57, 58 and 59. Towers 262-271 located in the vicinity of the townlands of Brittas, Cruicetown, Rahood and Raffin have been illustrated in Photomontages 46, 47, 47A and 48C.

16.4.11 Philip Murtagh and Family (SI-2015-0475) – Photomontage at Ardracran

16.4.11.1 Photomontage at Ardracran

225 The submission states that the photomontage taken at Ardracran is misleading. The trees are in reality scant and with gaps and not a continuous line. It also states that the EIS states that the pylons are mostly hidden.

Applicant's Response:

- 226 The submission does not state a photomontage number but it is assumed that the comments relate to Photomontage 60. The photomontage is located at a bridge of the M3 motorway southwest of Ardbraccan demesne, a distance of 529m to the closest tower and illustrates an open view of the proposed development. Volume 3D, Chapter 11, Section 11.5.4.5 describes the potential landscape and visual effects as seen in this view. The EIS states that *"upper parts of the towers are visible against the sky, the lower part are screened"*. The photomontage depicts a view as it will be experienced from this location. All photomontages contained in the landscape and visual impact assessment have been produced to the current best practice guidelines as detailed previously.

17 MATERIAL ASSETS GENERAL

17.1 OVERVIEW

- 1 Material Assets General was raised as an issue in approximately 207 no. of submissions/observations. These submissions are listed in Table 39 of **Appendix 1.2** of this report.
- 2 The topic of Material Assets General considers the potential impacts from the proposed development on the surrounding environment, with regard to current utilities, aviation and waste infrastructure. We have identified a number of recurring issues raised in the submissions. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 40 of **Appendix 1.2** of this report.

17.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Material Assets General is evaluated in Chapter 12 Material Assets General, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

17.2.1 Aviation in Ireland

- 4 A number of submissions raise concerns that the proposed development will impact on the aviation activities of emergency services and other aviation activities e.g., hot air ballooning. Aviation issues are covered in Chapter 12, Material Assets – General, of Volume 3C & 3D of the EIS.
- 5 General Aviation is generally defined as a civil aircraft operation, other than a commercial air transport flight operating to a schedule or military aviation. This includes fixed-wing aircraft, helicopters and hot-air balloons. The Irish Aviation Authority (IAA) promotes, regulates and oversees the safe operation of all aspects of General Aviation within the State and also Irish registered aircraft and Irish licence holders wherever they may be engaged in aviation activity.
- 6 For the benefit of the General Aviation community there is guidance (including appropriate regulations) and advisory material, provided by the IAA, that is available to assist in activities such as pre-flight planning, performance planning, use of navigational equipment, hazards associated with aviation, etc. For General Aviation, the appropriate legislative instrument is the Irish Aviation Authority (Rules of the Air) Order, 2004. Specific directions under this Order may be published in the Aeronautical Information Publication (AIP, Ireland) or by Notices and Circulars. Of particular interest, in the context of new power-lines, is Part II, General Flight Rules, Protection of Persons and Property, Rule 3, Minimum Heights. This sub-rule indicates the minimum height to be maintained above ground or water albeit with allowable exceptions, for example, a balloon flight being conducted without causing undue hazard to persons or property.

17.2.1.1 Potential to Impact Safety - Examples

- 7 A number of submissions cite examples of two accident investigation final reports prepared by the Air Accident Investigation Unit (AAIU) of Ireland involving power lines. The first of these was AAIU Report No: 2010-009, published 05/08/2010, which investigated a helicopter accident at Kilschanchoe on the 1st April 2009. The second of these was the AAIU Report No: 2013-004, published 04/04/2013, which investigated a helicopter accident near Borrisoleigh on the 19th June 2012. Both of these accidents involved contact with overhead power-lines.
- 8 In the Kilschanchoe accident, the low level exercise should have been carried out at the base airfield (Weston). The helicopter descended for the purpose of the exercise (it was not landing) below 500ft (150m) Above Ground Level (AGL). This descent was in contravention of the Rules of the Air Order. The helicopter impacted a disused overhead power line, supported on single wood pole structures, while flying at a height of approximately 30ft (9m) AGL. Note that low voltage overhead lines are often difficult to see from the air but, in any case, the helicopter was in contravention of S.I. No. 72. It is worth noting that the proposed towers for the new transmission line vary between 26m to 51m AGL; this provides sufficient clearance between all aircraft (including balloons and helicopters).
- 9 In the Borrisoleigh accident, the helicopter was on an Emergency Aeromedical Support Service (EAS) mission and had been directed to a potential landing site near Borrisoleigh. The pilot flew a clockwise reconnaissance pattern over the landing site, which was one of the options available to him in accordance with EAS training and SOPs (Standard Operating Procedures). The Pilot identified two parallel sets of overhead wires in the selected field. However, the Pilot and other crew members did not identify a pair of wires which traversed their final approach to landing although the Pilot had raised the possibility of their existence. During the final stages of its approach to landing, the helicopters main rotor blades struck 20 kV overhead lines suspended at 8.5m AGL and supported on single wood pole structures. Garda and others on the ground had noted the presence of the transverse wires but had no means of communication with the helicopter crew to alert them to a potential hazard.

Applicant's Response:

- 10 In both accidents the lower voltage wood pole power lines were relatively close to the ground and difficult to identify from the air. A power transmission line with tower heights varying between 26m to 51m AGL would be much easier to identify from the air, especially if fitted with visual warning devices. In addition, a recommendation was made that use of the Tetra (or equivalent) radio system should be expanded to facilitate air-ground communications during EAS missions.

17.2.1.2 Potential to Impact on Medevac Helicopter Operations in Ireland

- 11 A number of submissions raise concerns regarding the EAS service based in Athlone and provided by the Air Corps, supported by the Coastguard helicopter based at Dublin Airport. The submissions are concerned that the proposed power lines in the vicinity of, and on the routes between landing sites and hospitals may pose a threat to the safe conduct of these flights especially in poor weather with poor visibility.

- 12 The EAS currently operates using an Air Corps helicopter. The service covers all parts of the country including the area through which the proposed power-line will run. The role of the Service is to provide life support to patients on the ground and to provide rapid transport to the nearest appropriate hospital where land transport ambulance times would result in a life-threatening delay. Support is also provided by the Coastguard helicopter. There are designated landing sites throughout the country but helicopters are sufficiently versatile so that other landing sites may be used if free of obstacles within the approach and landing areas. For example, open fields, school playing fields or even roads could be used in an emergency. Helicopter operations are required to adhere to S.I. No. 72.

Applicant's Response:

- 13 In response to this submission, the presence of a power transmission line does not preclude use of the EAS or equivalent. Helicopter crews are equipped with the latest charts, the helicopters are fitted with GPS and the selection of an appropriate landing site, under low visibility conditions, should be possible even with power lines in close proximity.

17.2.1.3 Hot Air Balloon Industry in Ireland

- 14 A number of submissions raise the topic of hot air ballooning, in Co. Meath. These submissions including a private ballooning company and other individuals making observations on the application. The items raised by the ballooning company include the topic of the safety of ballooning in areas of the proposed OHL development and their concern that the proposed development will impede the operation of their business. They also note that consequent to their concerns around safety and the operation of their business, that they have associated concerns for potential loss of business and potential negative impacts for tourism, associated with hot air ballooning, in Co Meath.
- 15 Hot air ballooning has been prolific in the County Meath area for over 25 years. The IAA Aeronautical Information Publication (AIP) only allows hot air balloons to fly in Uncontrolled Airspace. Hot air balloon operators have to follow guidance given pursuant to the rules of the Air Order. The popularity of hot air ballooning in County Meath arises for a number of reasons:
- The availability of Uncontrolled Airspace relatively near to the Dublin catchment area within which a high percentage of customers reside
 - Trim Airfield hosts a Registered Training Facility for hot air balloons
 - The local terrain is free of mountainous areas and other significant obstructions (but there is no requirement that powerlines are to be absent in the terrain).
 - Livestock and crop disturbance issues can be generally avoided
 - A majority of hot air balloon pilots are local residents.
- 16 Information supplied in 2010 indicated that one (of two commercial hot air ballooning companies) company based in County Meath, employed two full-time and ten part-time employees, passenger flights were scheduled 7 days a week (subject to weather conditions), the number of passengers carried on each trip may vary between one and sixteen persons, and that over a 1000 passengers are flown each year.

17.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

17.3.1 Northern and Western Regional Assembly (SI-2015-0026)

- 17 In their submission the Northern and Western Regional Assembly, (Item 2) raised the following issue: *“The management of waste arising from the construction process, in the context of the emerging policy for future landfill disposal in the Draft Waste management (sic) for the Connaught/Ulster Region. The applicant may need to be more explicit on waste disposal, specifically locations and environmental impacts.”*

Applicant's Response:

- 18 The response to this submission is dealt with in Chapter 13 of this document as follows:

“All waste generated on site will be managed in an environmentally responsible manner and in accordance with the outline CEMP. The management of waste during the construction phase will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority followed by reuse and recycling. Waste disposal will comply with the Waste Management Act 1996, as amended. As outlined in Chapter 7, Volume 3C of the EIS, it is considered that the vast majority of excavated material will consist of subsoil and naturally excavated soils and rock. If removal off site is required, waste soil/rock material will be transported to an appropriate waste recovery/disposal facility operated under a waste license or permit. Specific outlets for such material will be a matter for the contractor and these will be determined by the available capacities at said facilities at the time of construction. The proposed development will consider the implications, if any, of the final Waste Management Plan 2015-2021 for the Connaught/Ulster Region. The management of waste arising from the proposed development is consistent with the Draft Waste Management Plan 2015-2021 for the Connaught/Ulster Region.”

- 19 As noted in Chapter 12 of Volume 3C and 3D of the EIS (Section 12.5.2.4 and 12.5.2.3),

“A worst case scenario would be that all excavated material (10,500m³ for all the towers in CMSA) (14,200m³ for all the towers in MSA) would be sent off-site to a licensed /permitted waste recovery facility / landfill”

- 20 Also as noted in Volume 3C and Volume 3D of the EIS, Section 12.6.1.3.2,

“A CWMP (which will form part of the CEMP) will be implemented to minimise waste and ensure correct handling and disposal of construction waste streams in accordance with the Department of the Environment, July 2006, Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. The key principles underlying the plan will be to minimise waste generation and to segregate waste at source”.... “Where the excavated material will not be used onsite, all surplus soils will be transported to a licensed waste recovery facility and /

or landfill, refer to Appendix 7.2, Volume 3C Appendices/ Volume 3D Appendices of the EIS”.

17.3.1.1 Meath County Council (SI-2015-0216)

- 21 Section 6, Transportation, of the Meath County Council submission included some general comments relating to aviation. TRANS POL 2 states that *‘Restrict development which would give rise to conflicts with aircraft movements on environmental or safety grounds in the vicinity of Dublin Airport and on the main flight paths serving Dublin Airport, and in particular restrict residential development in areas likely to be affected by levels of noise inappropriate to residential use’*. TRANS POL 5 states that *‘Take account of the advice of the Irish Aviation Authority with regards to the effects of any development proposals on the safety of aircraft or the safe and efficient navigation thereof’*.

Applicant’s Response:

- 22 It is noted that the flight paths of aircraft operating to and from Dublin Airport are at a considerable height above AGL and therefore above the proposed OHL.

17.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

17.4.1 Lough Egish Community Development Limited (SI-2015-0281)

- 23 The submission notes that Lough Egish Food Park forms an integral part of the community, enabling many food based commercial enterprises to prosper and notes that the Food Park model itself, which has had to face many obstacles to date, can ill afford negative health and environmental issues which may threaten its very existence as a going concern.

Applicant’s Response:

- 24 Similar concerns have been raised in submissions and addressed in Chapter 10, Land Use within this document, within Section 10.2.3.2, relating to potential impacts on the food chain.
- 25 As noted in Section 10.2.3.2 of this document, *“There is no reference to high voltage OHL affecting the quality of beef, lamb or milk in the Beef and Lamb Quality Assurance Scheme Producer Standards and National Sustainable Dairy Assurance Scheme Producer Standards, as published on the Bord Bia Website (www.bordbia.ie). There is no reference to high voltage OHL affecting the quality of grain in the Grain Quality Assurance Scheme (<http://www.irishgrainassurance.ie/>). Neither is there a reference to OHL or any criteria relating to OHL in the published Organic Standards of the Irish Organic Farmers and Growers Association (IOFGA) or the Organic Trust Ltd.”* That section of this report similarly notes that there is no evidence of any impact on food production on farms along the existing 400 kV lines for the past 30 years.

17.4.2 Kevin Rice (SI-2015-0072)

- 26 A submission has been made by a landowner in the Cavan Monaghan Study Area with lands adjacent to Tower 196. Mr Rice notes the following *“I have constructed a wind turbine for generation of electricity for my home and farm use. If the proposed construction*

of the pylons and overhead high voltage cables go ahead, I feel this will diminish the performance of the wind turbine as the pylons are upwind of the prevailing wind."

Applicant's Response:

- 27 The closest tower within the Cavan Monaghan Study area to the lands owned by Mr Rice is Tower 196, which is located within 50 metres of the boundary of Mr Rice's landholding, but not directly on his lands. It is understood from Mr Rice's submission that he has a wind turbine on his lands for generation of electricity for home and farm use; the location of which is approximately >300m from the closest tower, Tower 196. Given the distance from the tower structure to the farm wind turbine, it is considered that the performance of the wind turbine will not be diminished by the proximity of the tower.

17.4.3 NEPP (SI-2015-0332)

- 28 **Item 1:** As contained in SI-2015-0332 - Appendix 4: Copy of the Trim Airfield submissions (p113) a letter is dated 21st August 2015 to An Bord Pleanála from Captain Pat Murphy, Trim Airfield Operator. The salient points of the letter are:

- There are different types of flying activities operating out of Trim including training, general fixed-wing General Aviation, helicopter operations plus the availability of Trim for emergencies.
- A review of the appropriate Irish Aviation Authority regulations applicable to Trim Airfield as a licensed aerodrome
- The regulatory treatment of obstacles as per regulatory treatment of obstacles as per Irish Aviation Authority (Obstacles To Aircraft In Flight) Order 2005 [S.I. No. 215 of 2005] and IAA Aerodrome Licensing Memorandum (ALM No. 3. 2005)
- With particular reference to ALM No. 3, the rights of the IAA or the Aerodrome Licensee regarding the definition and removal of obstacles.

- 29 It should be noted that previous work undertaken in 2010 indicated that the proposed development does not penetrate the obstacle limitation surfaces as applicable to Trim Airfield. Nevertheless, ALM No.3 notes that,

'In certain circumstances, objects that do not project above any of the obstacle limitation surfaces may constitute a hazard to aeroplanes as, for example, where there are one or more isolated objects in the vicinity of the aerodrome. It is particularly desirable to review carefully any proposal to erect high masts or other skeletal structures in areas that would otherwise be used by aircraft on wide visual circuits, or arrival routes towards the aerodrome or circuit, or on departure or missed approach climb paths. Avoidance by marking cannot always be relied on in view of the relatively inconspicuous character of these structures'

Applicant's Response:

- 30 An overhead transmission line with several pylons is neither an isolated object and nor is it of an inconspicuous character. Therefore, the transmission line could not be considered to be an obstacle, in terms of current aviation regulatory requirements, although it would be an additional hazard and could pose an additional level of risk to aircraft operations which

can be managed. In addition, it is noteworthy that the IAA has not made a submission/observation to the Board on the application.

31 **Item 2:** Appendix 4 continues by quoting some world-wide examples of accidents involving power lines and different types of aircraft:

- West Arm, New Zealand, 28th March 2000: Helicopter struck a power-line while approaching to land
- Twyford, UK, 8th March 2000: Helicopter struck a power-line when returning to Rochester Airport. The supporting pylons were hidden by trees and the cables blended into the rural background.
- Torquay, Australia, 1997?: Aircraft PA Tomahawk struck powerlines when on final approach for a landing
- UK, 11th December 2005: Balloon collided with power cables while trying to land on the crest of a hill
- Borrisoleigh, 12th June 2012 (refer to 0070 above).

32 Appendix 4 concludes by expressing the views of the Trim Flying Club as to how the powerline would affect operations, for the following reasons:

- A normal westerly approach to Trim Air airfield would require fixed-wing aircraft to cross the powerline with little margin for error with additional risk for trainee pilots on solo flights and for those pilots who are unfamiliar with the airfield.
- Simulated wing-flap training would further reduce the safety margins between aircraft flight path and the top of pylon level.
- Engine failure on taking off in an easterly direction could result in a forced landing in the vicinity of the power-lines
- Visibility of the powerlines could be reduced due to glare from the setting sun

Applicant's Response:

33 It is be correct to say that the location of the proposed powerline will present an additional potential hazard which can be managed, however, the applicant understands that the IAA has not raised any issue which might result in the airfield being no longer available for pilot training in the event that approval is granted for the proposed development.

34 **Item 3:** As contained in SI-2015-0332 - Appendix 5: Copy of the Irish Balloon Flights submission. Included within Appendix 5 there are a number of sub-submissions. These include:

- a) Malcolm White, Irish Balloon Flights (IBF), dated 21st August 2015
- b) Comments by IBF on EirGrid Submission Volume 3D Section 12.15
- c) Balloon flight tracks, as flown in the Meath area, superimposed on the proposed power-line route.
- d) Third-party statements in support of this submission including Meath Tourism, Trim Tourism, Knightsbrook Hotel, Spa and Golf Resort, Trim Castle Hotel
- e) Malcolm White, Response Document, dated May 2010, to the Statement of Evidence provided by Mr. Rodney Fewings

- f) Statutory Instrument S.I. No. 422 of 1999, IAA (tethered balloons, airships, free balloons and kites).
- 35 Document (a) gives a general background to the history of Irish Balloon Flights (IBF) and their benefit to local tourism. Collision with power-lines was noted as the single largest hazard in Hot Air Ballooning. There is considerable world-wide data on such accidents. The position of IBF remains unchanged since the 2010 Oral Hearing (refer (e)).
- 36 Document (b) comments by IBF are in general agreement to comments made by the IAA incorporated in Volume 3D Section 12.15 but with a number of caveats. The strongest objection was that the construction of the powerline would have a negative impact on tourism in general; that it was not viable for IBF to move to another location, and (unsubstantiated) that it would not be possible for Trim to host ballooning festivals in the future.
- 37 Document (c) shows balloon tracks but gives no indication of starting / finishing points and the scale is too small to indicate where balloons landed in the vicinity of the proposed power-line route. However, a minority of tracks do in fact appear to have crossed the route of the proposed power-line; many more tracks appear to have passed over or in the vicinity of Trim town.
- 38 Document (d) includes supporting letters which deal with the general issues of tourism revenue loss in the event of the power-line being constructed.
- 39 Document (e) was a Response Document to the Statement of Evidence provided by Mr Rodney Fewings in 2010.

Applicant's Response:

- 40 In relation to all of the above, the project team has consulted with the IAA in relation to a balloon flight company operating in the general Trim area. As outlined in Section 12.5.3.2.2 and Section 12.6.2.3 of Volume 3D of the EIS consultation with the IAA, clearly indicated that ballooning activity should not be a reason to prevent changes to the existing landscape, including the construction of overhead power lines.
- 41 The potential presence of all power lines in this area will have to be considered by the balloon pilots as part of their flight planning and it should be noted in this regard that there are already 23 km of 400 kV OHL, over 250 km of 220kV OHL and over 230 km of 110kV OHL in place in County Meath. The proposed OHL will have to be taken into account by the balloon pilots for launching and landing in the same way as is the practice for these existing OHLs, however, as previously stated the IAA balloon pilots are allowed fly over power lines.

17.4.4 Michael Munnely (SI-2015-0628)

- 42 The submission stated that the power-lines are a hazard to General Aviation with particular concerns about aircraft taking off and landing under emergency situations, especially as the prevailing wind is from the west and the power-lines have a general north-south orientation. In particular, the alignment of the power lines would have an adverse effect on the operations of nearby licensed (Trim) and unlicensed airfields.

Applicant's Response:

- 43 The points raised, and response, have been covered previously in Section 17.2.1 of this document. It is recognised that the powerline adds an additional potential hazard however the addition of the proposed OHL to the existing and extensive wirescape in the region is negligible and the level of risk would be very low.

18 MATERIAL ASSETS TRAFFIC

18.1 OVERVIEW

- 1 The topic of Material Assets Traffic considers the potential impacts from the proposed development in relation to traffic.
- 2 Material Assets Traffic was raised as an issue in approximately 59 no. of submissions/observations. These submissions are listed in Table 41 of **Appendix 1.2** of this report. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is in Table 42 in **Appendix 1.2**.
- 3 The topic of Material Assets Traffic is addressed in Chapter 13 Material Assets Traffic, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

18.1.1 Potential Impact of Construction Traffic on Narrow Roads and Numbers and Frequency of Construction Traffic Generated by the Works

- 4 A number of submissions raised the potential impact of construction traffic on narrow roads within Monaghan, Cavan and Meath, and the number and frequency of construction traffic generated by the proposed North-South 400 kV Interconnection Development.

Applicant's Response:

- 5 It must be appreciated that the appraisal of traffic impact, and indeed other construction and operational environmental impacts is informed by the long experience and expertise of EirGrid and ESB Networks in the design, construction and maintenance of transmission infrastructure development. The vehicles directly involved in the construction of the proposed towers will include crane(s), excavators, dump trucks, 4x4s, tractor and trailers and concrete delivery vehicles. (Volume 3B, Chapter 7, Section 7.3.4.2). No abnormal size loads will be making deliveries to the individual tower sites. There will be no difference for construction access compared to normal farm traffic, oil lorries and other service vehicles accessing the lanes.
- 6 Where there are constraints regarding access, smaller vehicles will be used to haul materials.
- 7 It should be noted, that vehicle loading will be subject to the *Road Traffic (Construction, Equipment and Use of Vehicles) Regulations*:
 - where a three axle rigid lorry is subject to a maximum laden weight of 26t (with road friendly suspension), subject to 5.5 tonnes per metre of axle spacing; whereas
 - a four axle rigid lorry is subject to a maximum laden weight of 32t (with road friendly suspension), subject to 5 tonnes per metre of axle spacing.
- 8 A 6m³ payload of concrete transported in a 3-axle ready mix lorry has a laden weight of 26t and an 8m³ payload of concrete transported in a 3-axle ready mix lorry has a laden weight of 32t.

- 9 It should also be noted that a 22 tonne tracked excavator has a lower ground pressure than a 22 tonne wheeled vehicle as the tracks spread the loading over a larger contact area.
- 10 Existing access routes / field gates are proposed to be used to access the tower locations (EIS Volume 3C section 13.4.3 paragraph 48 and Volume 3D section 13.4.3 paragraph 49).
- 11 Widening of roads and lanes will not be required for the works. In a number of cases, gates and farm tracks have become overgrown. Section 6.5.2.1.3 of Volume 3C (paragraph 265) and Section 6.5.2.1.3 of Volume 3D (paragraph 266) reports that potential adverse ecological impacts have been largely avoided by using existing farm tracks and gaps in hedgerows. Given that farm scale or smaller type machinery (dumpers) will be utilised during construction, only minimal vegetation management is likely to be required at existing gaps. This vegetation clearance will take the form of trimming of overgrown hedgerows. In some cases it will be necessary for a gate post to be temporarily removed and hedges trimmed for the works to ensure vehicles can turn safely in to and out of the access.
- 12 Hedgerow clearance to maximise visibility splays at each site access / egress will be avoided. It shall be a requirement of the works contract for the appointed contractor to prepare a Traffic Management Plan which shall include all the items set out in the Outline Traffic Management Plan (Appendix 7.2 to Volume 3B of the EIS) and confirming details of access / egress arrangements to each site. The principal contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location. (Refer to Section 4.1.1 to 4.1.4 of the Outline Traffic Management Plan (TMP) EIS Volume 3B Appendix 7.2). In addition temporary traffic management signs shall be erected in advance of each site access in accordance with Chapter 8 of the Department of Transport's Traffic Signs Manual.
- 13 Section 7.3.4 of Volume 3B reports the timescales for works at each tower assembly. The timescales are summarised below:
- Site Clearance, Construction of Foundations and Tower Assembly - 7-17 days for standard installations (9-21 days for piling installations);
 - Conductor works and final land reinstatement - 8 to 12 days to complete. (conductor works will normally be programmed in the order of 12 months after foundation and tower assembly works).
- 14 A number of crews will be working on the project at any one time, but the crews will be dispersed over a large area, thus dispersing the traffic over a large area also.
- 15 Appendix 13.3 and Table 13.5 (Section 13.5.2.1 of EIS Volume 3C and Volume 3D) reports that a maximum daily peak of 46 vehicle movements will be generated by the construction of a tower foundation, in particular during the more intensive period of operation when pouring the concrete foundations. These 46 vehicles will be distributed throughout the 8 hour working day, with the busiest period being the arrival of staff and initial delivery vehicles in the AM, when it is likely that a maximum of 2 staff vans / 4 x 4s arrive to the site and 3 concrete lorries and 2 to 3 tipper lorries arrive and depart from the site. This will generate a maximum of 14 vehicles in the peak hour to / from the site. These 14 vehicles in any one hour will also be distributed throughout the hour. The risk of road users meeting multiple construction vehicles along the road at any one time will be low.

- 16 Appendix 13.3 of EIS Volume 3C also reports the estimated maximum daily traffic during tower erection of 14 vehicle movements. These 14 vehicles will be distributed throughout the 8 hour working day, with the busiest period being the arrival of staff and initial delivery vehicles in the AM, when it is likely that a maximum of 3 staff vans / 4 x 4s arrive to the site and 1 delivery lorry arrives and departs from the site. This will generate a maximum of 5 vehicles in the peak hour to / from the site. The risk of road users meeting multiple construction vehicles along the road at any one time will be low.
- 17 As part of the works, the contractor will be required to finalise a detailed traffic management plan, incorporating all elements in the Outline TMP (Appendix 7.2 to Volume 3B) and will be required to liaise with land owners to advise them of programme and traffic issues. The time of construction will be agreed and recorded with the landowner prior to the commencement of works (Section 7.3.4.1.1, Chapter 7, Volume 3B).
- 18 The contractor shall also ensure that the local community is informed of proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas (Section 4.13 of the Outline TMP, Appendix 7.2 to Volume 3B).
- 19 Before the works commence, there will be a requirement for a pre-construction video survey of the road pavement and verges to be carried out along all the proposed haul roads. After the works, a post-construction video survey will also be carried out. This will facilitate the assessment of any damage resulting from the construction haulage, and any damage identified as being attributable to construction traffic associated with the proposed development will be repaired to an appropriate standard (Section 4.8 of the Outline TMP, Appendix 7.2 to Volume 3B).
- 20 The project undertaker will commit to covering the timely cost of repair by the Roads Authorities of any road damage arising from the proposed construction operations (Section 4.8 of the Outline TMP, Appendix 7.2 to Volume 3B).
- 21 Any damage to private roads will be repaired to an appropriate standard by the contractor for the works.

18.1.2 Potential Impact of Construction Traffic on Safety and Health of adjacent landowners

- 22 The issues of the potential impacts from construction traffic on adjacent landowners and the concern of the potential health and safety impacts on their children playing adjacent to construction traffic was raised in submissions.

Applicant's Response:

- 23 The Outline Traffic Management Plan (Appendix 7.2 of Volume 3B Appendices) outlines particular construction requirements that the contractor appointed to carry out the works shall take account of, including:
- Section 4.5 – Speeds – Drivers of construction vehicles / HGVs will be advised that vehicular movements in sensitive locations, such as local community areas, shall be restricted to 60 km/h. Special speed limits of 30 km/h shall be implemented for construction traffic in sensitive areas such as school locations.

- Section 4.6 – Road Cleaning – the main contractor will be required to carry out road sweeping operations to remove any project related dirt and material deposited on the road network by construction / delivery vehicles.
- Section 4.7 – Vehicle Cleaning - the main contractor will be required to provide wheel washing facilities, and any other necessary measures to remove mud and organic material from vehicles exiting tower sites.
- Section 4.8 – Road Condition - The contractors shall ensure that:
 - Loads of materials leaving each site will be evaluated and covered if considered necessary to minimise potential dust impacts during transportation.
 - The transportation contractor shall take all reasonable measures while transporting waste or any other materials likely to cause fugitive losses from a vehicle during transportation to and from site, including but not limited to:
 - Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss.
 - Utilisation of enclosed units to prevent loss.
 - The roads forming part of the haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the haul route as required.
- Section 4.13 – Communication - The contractor shall ensure that the local community is informed of proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas.

18.1.3 Potential Impact of Construction Traffic on the Safety of Hunt events along local roads

- 24 Some submissions raised the potential impact of construction traffic on the safety of Hunt events along local roads.

Applicant's Response:

- 25 Section 4.13 of the Outline Traffic Management Plan (Appendix 7.2 of Volume 3B Appendices), references communication. The contractor shall ensure that the local community is informed of proposed traffic management measures in advance of their implementation. Such information shall be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Early consultation with the hunt organisers to identify the dates for hunts in the area will ensure that programming to avoid conflicts with hunts can be considered and will be implemented by mutual agreement.

18.1.4 Development of a Detailed Construction Stage Traffic Management Plan

- 26 A number of submissions queried the provision of and development of a detailed Traffic Management Plan.

Applicant's Response:

- 27 An outline construction Traffic Management Plan (outline TMP) is included in Appendix 7.2 to Volume 3B.
- 28 This Outline TMP shall be used by the appointed contractor as a basis for the finalisation of the TMP and shall detail, at a minimum, the items detailed in this Outline TMP and any subsequent requirements of the local authorities, including providing advanced warning signs, in accordance with Chapter 8 of the Department of the Transports Traffic Signs Manual 2010, on the approach to proposed site access locations.
- 29 The contractor will be required to confirm details under the following headings:
- A construction phase programme of works;
 - Site Access and Egress;
 - Traffic Management Signage;
 - Routing of Construction Traffic / Road Closures;
 - Timings of Material Deliveries to Site;
 - Traffic Management Speed Limits;
 - Road Cleaning;
 - Road Condition;
 - Road Closures;
 - Implementation of Traffic Management Plan;
 - Details of Working Hours and Days;
 - Details of Emergency Plan;
 - Communication;
 - Construction Methodologies; and
 - Particular Construction Impacts.
- 30 The haul routes as presented in EIS Volume 3C Figures 13.9 to 13.13 and Volume 3D Figures 13.9 to 13.13 are the haul routes proposed for the works.

18.1.5 Use of temporary access routes on private laneways where no access has been granted by landowner

- 31 A few submissions question that some of the temporary accesses are on to private laneways where the owner may be reluctant to grant access.

Applicant's Response:

- 32 This matter relates to the implementation of any planning approval which may be granted and is not relevant to the determination of the present application for approval. The submission deals with an unsubstantiated scenario which is impossible to consider further at this stage, including by An Bord Pleanála in undertaking its EIA of the proposed development and in considering the merits of this application for approval. However,

without prejudice to the same, ESB and EirGrid have certain statutory powers which enable them to gain access to lands for the purposes of carrying out development.

18.1.6 Potential Impact of Construction Traffic on Racehorses exercising on Roads

33 The concern of the impact of construction traffic on racehorses exercising on local roads was raised in submissions received.

Applicant's Response:

34 The objective of the Outline Traffic Management Plan (Appendix 7.2 of Volume 3B) is to ensure that the residual impacts to the public road network during the construction phase of the project are minimised and that transport related activities are carried out as safely as possible and with the minimum disruption to other road users. The 'Rules of the Road' apply to all road users: drivers, pedestrians, motorcyclists, horse riders and cyclists. If a horse is being ridden or led along a road, the person in charge must remain on the left-hand side of the road and obey all Rules of the Road.

18.2 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES

18.2.1 Northern & Western Regional Assembly (SI-2015-0026)

35 This submission raises one issue relating to roads and traffic: the location of new or intensified access points to the public road network and the implications for traffic safety may need to be provided in greater detail. This would increase public knowledge of the application impacts and the proper planning of the project.

Applicant's Response:

36 Volume 3C Figures 13.14 to 13.17 and Volume 3D Figures 13.14 to 13.17 present the location of all access locations on small scale OSi discovery mapping along the development. Volume 3B Figures 1 to 34 presents the location of all access locations on larger scale orthophotography mapping.

37 The locations of the proposed haul routes are presented in Volume 3C Figures 13.9 to 13.13 and Volume 3D Figures 13.9 to 13.13.

38 In order to reduce disruption along the designated haul routes, alternative feasible routes are available and presented on revised Figures 13.1, 13.2 and 13.11 (EIS Volume 3C), which is presented in Appendix 18.1 of this report.

39 In terms of visibility requirements at each site access / egress, it shall be a requirement of the works for the works contractor to finalise the Traffic Management Plan which shall include details of access / egress arrangements to each site. Where visibility splays are restricted, the principal contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location. (Refer to Section 4.1.1 to 4.1.4 of the Outline Traffic Management Plan (TMP) EIS Volume 3B Appendix 7.2). In addition temporary traffic management signs shall be erected in advance of each site access in accordance with Chapter 8 of the Department of Transport's Traffic Signs Manual.

18.2.2 Transport Infrastructure Ireland (TII) (SI-2015-0030)

40 TII stated the following point in their submission:

Item 1: “Concern that the EIS submitted in support of the application does not appear to make substantial reference to the Leinster Orbital Route or how the interface between the proposed power line development and the LOR will be addressed”.

Applicant's Response:

41 The indicative corridors of the proposed Leinster Orbital Route are presented in the EIS Volume 3D Figure 13.1 of section 13.4.4 and Figure 13.19. The indicative corridor was issued by the NRA's Policy Advisor (Planning) on 26th January 2015. The EIS notes that the scheme has yet to go through the route selection stage and an exact route is, therefore, not known. Therefore, as the exact alignment (both horizontally and vertically) of the LOR is not known the interface is only possible to describe in general terms.

42 TII also raised the following issues:

Item 2: “While it is noted that the EIS submitted in support of the application does not appear to identify in detail the methods/techniques employed in traversing the existing national road network, the Authority requests that the required safety and standards of the national road network is maintained through appropriate best practice construction and approval methods.”

Item 3: “The Authority is concerned to ensure that the proposed works do not impinge on the M3 motorway and the Concession Operator; the Authority requests that the NRA, the relevant planning authority and the M3 Concession Company are consulted and their agreement sought in advance of works being undertaken in proximity to the M3.”

Applicant's Response:

43 EIS Volumes 3C & 3D section 13.6.1.3 notes that short term road closures will be required to erect and remove guarding at road crossings.

44 EIS Volumes 3B section 7.3.2 notes that, for safety reasons during the stringing operation, the conductor will be kept clear of roads / railway crossings and existing transmission or distribution lines. These obstacles have to be guarded; see Figure 7.1 EIS Volumes 3B for an example of guarding. In addition, section 4.15 of Outline Traffic Management Plan (EIS Volume 3B Appendix 7.2) outlines particular construction impacts and requirements that the contractor appointed to carry out the works shall take account of, prior to commencement of any works. In relation to the crossing of National Roads and the M3 motorway, the following is specified:

45 The contractor shall include in their final Traffic Management Plan, proposed traffic management measures to be utilised for the installation and removal of guarding across National, Regional and Local Roads. Such plans shall be made available to the relevant local authorities, National Roads Authority and relevant stakeholders for consideration and approval.

- 46 The contractor shall include in the final Traffic Management Plan (TMP), proposed traffic management measures to be utilised for the installation and removal of guarding crossing the M3 Motorway. The TMP shall be made available to the relevant local authorities, Transport Infrastructure Ireland and relevant stakeholders for consideration and approval.
- 47 Subject to a successful planning application, the developer will arrange to meet Transport Infrastructure Ireland to discuss and agree the measures and constraints for crossing National Roads and Motorways. Agreed measures and constraints will be included in the Tender Documents for the proposed construction works.
- 48 TII also stated the following point in their submission:

Item 4 - *The proposed development traverses the corridor of the proposed Leinster Orbital Route north of Trim between Pylons 342 and 354. With specific regard to the proposed development between in this area, the Authority requests that the Board includes the following condition:*

- *That the developer/scheme promoter shall consult with the TII and agree detailed design specifications for the proposed 400 kV line in relation to the LOR in advance of any works along the route between Pylons 342 and 354.*

Applicant's Response:

- 49 As noted above, there is currently no identified route, and therefore preliminary vertical and horizontal design of this route. Further liaison will continue with TII during future stages of the Leinster Orbital Route project. The final point in TII's submission stated:

"The Authority also requests that the Board satisfy itself that the proposed power cables between Pylons 342 and 354 provide suitable vertical clearance for a future Leinster Orbital Route which may be at a level of 7.5m above the general ground level."

- 50 The preliminary design of the 400 kV interconnection development crosses the LOR corridor at Robinstown and at the R161/River Boyne. The ground clearances of the proposed line at these locations are:

Spans possibly catering for LOR at Robinstown (mentioned in correspondence from 2010):

- Span 345-346 has approx. 16.0 m ground clearance at max rating (80 degree sag)
- Span 347-348 has approx. 17.5 m ground clearance at max rating (80 degree sag)
- Span 348-349 has approx. 16.0 m ground clearance at max rating (80 degree sag)

Span possibly catering for LOR at R161/River Boyne (mentioned in correspondence from 2010):

- Span 352-353 has approx. 14.5 m ground clearance at max rating (80 degree sag)
- Span 353-354 traverses R161, has approx. 12 m ground clearance at max rating (80 degree sag).

- 51 The minimum ground clearance allowed over major roads to a 400 kV conductor is 10 metres. Based on the design of the, proposed development the ground clearances between Towers 345 to 349 and between Towers 352 to 354 are all in excess of 10m.

- 52 During the design of the 400 kV Interconnection Development, the applicant sought clarity on constraints for the LOR, but Transport Infrastructure Ireland (NRA at the time) was not in a position to refine the route other than supplying a 3.5km wide corridor. As the LOR route options or preferred route have not yet been developed at this stage, the developer considers it premature for the North-South 400 kV Interconnection Development to have a +7.5m additional ground clearance constraint across a 3.5km corridor, when the route of the LOR has yet to be determined, or indeed the project given government Capital Approval to proceed.
- 53 The developer requests that the Board consider the unnecessary potential additional visual and other impacts as a result of raising the height of towers between spans 345 to 354 to facilitate a scheme that is at the very early stages of the planning process with no horizontal or vertical alignments defined.

18.2.3 Cavan County Council (SI-2015-0214)

- 54 **Item 1:** Section 4.9 of this submission raises the following issues relating to roads and traffic:

"The Area/Road Engineers of Cavan County Council anticipate that there will be additional roads used than those reported in EIS Volume 3C Chapter 13, Figures 13.4."

Applicant's Response:

- 55 As stated above, the haul routes as presented within EIS Volume 3C Chapter 13, Figures 13.9 to 13.13 are the haul routes proposed for the works.

- 56 **Item 2:** Section 8 of Cavan County Council's submission raises the following issues relating to roads and traffic:

"Details of Special Contribution as detailed in Area Engineers report for repair of road damage by additional traffic serving the proposed development."

The cost of the construction damage:

A rate of €18m2 will be used for resurfacing and strengthening the local road network.

28,000 x 4 {wide} x 18 = €2,016,000

A contribution will also be required for the regional network.

A figure is base on surfacing approx 15km at €10.25 per m2

Therefore €1,000,000 will be required.

Special Contribution Total: € 3,016,000

Applicant's Response:

- 57 Special contributions referred to here relate to the Contributions Schemes provided for under Section 48 of the *Planning and Development Act 2000* (as amended). We have noted previously in this report that Section 48 Schemes do not apply to development under Section 182A of the Act. Notwithstanding this, EirGrid will abide by any conditions the Board may apply should it decide to grant approval for the proposed development.

58 **Item 3:** In Section 9.2 of this submission, the local authority reports that 'the application states that all major traffic will be using mainly the regional roads network to obtain access to the towers during the construction stage,'

Applicant's Response:

59 The applicant wishes to advise that:

- Section 4.1.2 of the Outline Traffic Management Plan (TMP) as presented in EIS Volume 3B Appendix 7.2 reports "*The majority of access / egress to proposed sites shall be facilitated from the local road networks*".
- Reference to the National and Regional Roads in Section 13.4.1 paragraph 36 of EIS Volumes 3C & 3D refers to the haul routes between the Material Storage yard near Carrickmacross and the various tower locations.

18.2.4 Monaghan County Council (SI-2015-0215)

60 **Item 1:** Section 2.7.3 of this submission raises the following issues relating to roads and traffic:

"Specific information on field boundary hedgerow removal to facilitate the widening of existing laneways or the creation of new 4 metre wide access tracks to the towers in the construction period is required."

Applicant's Response:

61 As stated in **Section 18.2.1** above, widening of roads and lanes will not be required for the works and there will be no difference for construction access compared to normal farm traffic, oil lorries and other service vehicles accessing the lanes. Any hedgerow management along public roads will be no different to hedgerow management carried out by the road authorities. Existing access routes / field gates are proposed to be used to access the tower locations. In a number of cases, gates and tracks have become overgrown. It is proposed to trim back the hedge / scrub to ensure access through the gate / farm track is available. In some cases it may be necessary for a gate post to be temporarily removed and hedges trimmed for the works to ensure vehicles can turn safely in to and out of the access. Refer also to **Section 6.3.3.1** of this report.

62 **Item 2:** Section 2.13.2 of this submission raises the following issues relating to roads and traffic:

"This site specific plan should detail access and egress arrangements that could potentially affect surface waters if site topography dictates."

Applicant's Response:

63 Existing access routes / field gates are proposed to be used to access the tower locations. Therefore existing culverts will be used for crossing field watercourses.

64 **Item 3:** Section 2.12 of this submission raises the following issues relating to Impact upon Public Roads:

“The applicant has identified 117 temporary access points for the proposed development. A number of these access points are via narrow lane ways or field gates which are not capable of providing safe access to the public road or provide sufficient space to accommodate the off loading of construction materials. The applicant should submit details for the upgrading of these access points to accommodate delivery vehicles and submit proposals for the safe ingress/egress of traffic using these entrances.”

Applicant's Response:

- 65 As stated in **Section 18.2.1** above, widening of roads and lanes will not be required for the works and there will be no difference for construction access compared to normal farm traffic, oil lorries and other service vehicles accessing the lanes. Existing access routes / field gates are proposed to be used to access the tower locations. In a number of cases, gates and routes have become overgrown. It is proposed to trim back the hedge / scrub to ensure access through the gate is available. In some cases it may be necessary for a gate post to be temporarily removed and hedges trimmed for the works to ensure vehicles can turn safely in to and out of the access. Refer also to **Section 6.3.3.1**.
- 66 The works contractor will be required to finalise the Traffic Management Plan which shall include details of access / egress arrangements to each site. The principal contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location. (Refer to Section 4.1.1 to 4.1.4 of the Outline Traffic Management Plan (TMP) EIS Volume 3B Appendix 7.2).
- 67 **Item 4:** Section 2.12.2 of this submission raises the following issues relating to traffic generation:

“The applicant has submitted estimated traffic generated per type of tower being constructed and indicated the potential increase of traffic on each of the haul roads. It would appear from Table 13.6 - Impact on Road Network that only one tower will be constructed on a particular haul route at any one time, the applicant should clarify that this is the intention and how it is proposed to monitor and enforce this scenario.”

Applicant's Response:

- 68 EirGrid confirms that only one tower will be constructed at any one time where access to adjacent towers is via the same single narrow local road.
- 69 **Item 5:** Section 2.12.2 of this submission requests clarification of distance from tower to road edge:

“The applicant should be requested to submit distances from the edge of the public road to the base of proposed towers which are adjoining the roads network, in particular, Tower 142 which is adjoining Regional Road R183.”

Applicant's Response:

- 70 The distance from the centre of the public road to the base of Tower 142 which is adjoining Regional Road R183 is approximately 21.5m as shown on **Figure 18.1** below.



Figure 18.1 Distance between the approximate centre line of R183 and Tower 142

- 71 **Item 6:** Section 2.12.2 of this submission requests clarification of responsibility of road repairs:

“The applicant should clarify the position in relation to the responsibility for carrying out of road repairs required as a result of use of the public roads to construct the proposed development.”

Applicant's Response:

- 72 The developer confirms that they will contribute towards the reinstatement of pavement / verge damage caused as a direct result of the works. Volume 3C Chapter 13, Section 13.6.1.2, paragraphs 81 to 84 specifies the approach to this assessment, i.e.:
- 73 Before the works commence, there will be a requirement for a pre-construction video survey of the road pavement and verges to be carried out along all the proposed haul roads. After the works, a post-construction video survey will also be carried out. This will facilitate the assessment of any damage resulting from the construction haulage, and any damage identified as being attributable to construction traffic associated with the proposed development will be repaired to an appropriate standard.
- 74 **Item 7:** Section 2.19 of this submission raises the following issues relating the Temporary Storage Compound:

“In respect of the access no details of the visibility splays required by Monaghan County Development Plan have been indicated and no details of any loss of hedgerow to provide these visibility splays has been

provided. Details of numbers of staff attending and car parking is also required."

Applicant's Response:

75 EIS Part 1 Volume 1B Drawings includes planning reference drawing MT-009-002 showing details of the proposed Material Storage Yard. The drawing shows the location of the proposed access gate, including the extent of the proposed visibility splays. EIS Volume 3B Section 4.1.3 reports the visibility splays for this junction as:

- 160m from a 3m set back is achievable to the left; and
- 120m from a 3m setback is achievable to the right.

76 A speed survey along the L4700 indicated that 85th percentile speeds along the road is 70km/h. The desirable minimum visibility splay for a 70km/h design speed in accordance with NRA DMRB NRA 41-42 is 3m x 120m.

77 The drawing shows the site layout and includes 19 no car parking spaces. One full time staff would normally be based at the Material Storage Yard.

78 **Item 8:** Section 2.22 of this submission raises the following issues relating to Public Road Restoration Bond:

"The developer should be obliged by condition imposed on any planning permission to lodge a bond of an appropriate amount with Monaghan County Council as surety for the restoration of damage caused to the public road network as a result of the construction, maintenance or renovation of the development. A condition should also be imposed upon any permission requiring the developer to carry out pre construction and post construction surveys of the public road network to be used for the construction of the development."

Applicant's Response:

79 As noted above, An Bord Pleanála will apply conditions it considers appropriate should it decide to grant approval for the proposed development, and EirGrid will abide by any such conditions.

80 **Item 9:** Section 3.15 of this submission raises the following issues relating to Comments by Elected Members:

"The proposed development will result in damage to the public roads network and Monaghan County Council should not be expected to fund the repairs."

Applicant's Response:

81 Our response to Monaghan County Council's submission in this regard applies.

82 **Item 10:** Section 3.16 of this submission raises the following issues relating to Comments by Elected Members:

- A lot of the roads and lanes that are proposed to be used were not designed for large vehicles such as 35 tonne lorries.
- The access lanes proposed to deliver materials to the tower sites were inadequate and are no more than horse and cart tracks.
- There are no site distances / visibility splays provided for access in and out of tower sites and this will lead to a health and safety issue.

Applicant's Response:

- 83 See paragraphs 4 to 6 of **Section 18.2.1** above
- 84 Before the works commence, there will be a requirement for a pre-construction video survey of the road pavement and verges to be carried out along all the haul roads. After the works, a post-construction video survey will also be carried out. This will facilitate the assessment of any damaged resulting from the construction haulage, and any damage identified as being attributable to construction traffic associated with the proposed development will be repaired to an appropriate standard.
- 85 The project undertaker will commit to covering the timely cost of repair by the Roads Authorities of any road damage arising directly from the proposed construction operations.
- 86 Any damage to private roads will be repaired to an appropriate standard by the contractor for the works.
- 87 In terms of visibility requirements at each site access / egress, it shall be a requirement of the works for the works contractor to finalise the Traffic Management Plan which shall include details of access / egress arrangements to each site. Where visibility splays are restricted, the principal contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location. (Refer to Section 4.1.1 to 4.1.4 of the Outline Traffic Management Plan (TMP) EIS Volume 3B Appendix 7.2). In addition temporary traffic management signs shall be erected in advance of each site access in accordance with Chapter 8 of the Department of Transports Traffic Signs Manual.

18.2.5 Meath County Council (SI-2015-0216)

- 88 **Item 1:** Section 6.12 of this submission raises the following issues relating to Traffic:

"The applicant should provide details of the volume of construction traffic, proposed haulage routes and access locations he intends to use in Meath so that the impact of the proposal can be assessed."

Applicant's Response:

- 89 The Location of the proposed haul routes are presented in EIS Volume 3D Figures 13.9 to 13.13.
- 90 The total and peak daily traffic movements generated by the works for the various tower types are presented in Table 13.5 (section 13.5.2.1) of EIS Volume 3D. The expected traffic generated during each works stage is presented in Appendix 13.4, Volume 3D Appendices of the EIS.

91 **Item 2:** Section 6.12 of this submission raises the following issues relating to access:

'No specific details, for entry to the various sites, have been submitted. It is stated that existing entrances will be used where possible. The applicant should be conditioned to submit details for entry to the various sites to ensure that they are safe and do not present a traffic hazard'.

Applicant's Response:

92 Volume 3D Figures 13.14 to 13.17 presents the location of all access locations on small scale OSi discovery mapping along the development. EIS Volume 3B Figures 1 to 34 presents the location of all access locations on larger scale orthophotography mapping. As outlined in **Section 19.2.1** of this document the principal contractor shall use a safe system of permanent flag men for the control of traffic during all access / egress operations at each site location. In addition temporary traffic management signs shall be erected in advance of each site access in accordance with Chapter 8 of the Department of Transport's Traffic Signs Manual. EirGrid will abide by any Conditions of Approval applied by the Board.

18.3 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

18.3.1 James and Mary McNally (SI-2015-0091)

93 The submission stated that the proposed access to Towers 114/113 passes up a small laneway past a protected circular fort, the stone wall perimeter of which is located on the laneway. The submission reports that there is a high risk that the perimeter wall of Latnakelly fort would be damaged by increased heavy traffic on the laneway.

Applicant's Response:

94 The construction requirements for the works shall specify the proposed measures to check and minimise vibrations of construction traffic hauling adjacent to the perimeter wall of Latnakelly Fort. The contractor will be required to select and utilise items of plant so that the maximum measured ground vibrations do not exceed the guidance peak particle velocity for historic structures.

18.3.2 Naoise Gordon (SI-2015-0133) and Dympna McShane (SI-2015-0137)

95 These submissions cite the following issues relating to the haul route along the L3510:

- The Haul/Access Routes identified in the EIS are wholly unsuitable for the project.
- The observer's home is located on L-3510-0 which is identified in the EIS as a proposed Haul Route. L-3510-0 is a narrow single lane road which requires vehicles to pull in for much of its length to enable oncoming vehicles to pass.
- Moreover, two sequential blind single lane bends are located on L-3510-0 immediately adjacent the junction of L-3510-0 with the old N2. These bends are dangerous and the proposed increase of traffic ranging from 11.4% to 19.5% as suggested in Table 13.6 of Volume 3C of the EIS will increase the danger for motorists and pedestrians to extreme levels. The bends are particularly unsuitable for the HGV's that will be used during construction.

- Moreover, a number of entrances to homes are located on these and other blind bends on L-3510-0 which will present a particular danger to residents entering and exiting their homes during construction e.g. the entrances of the homes of my neighbours Mrs Dympna Mc Shane and the Corr families are located at these bends. The EIS does not in any way address the particular dangers presented by construction traffic on such a minor road.
- L-3510-0 is the only route that can be used by me and my neighbours to enter and exit our homes on foot. It will not be possible for me to safely walk on L-3510-0 during construction due to the level of HGV's on the road.
- The routing of the Interconnector through such a rural location with narrow roads makes the development unsuitable. Another solution should be found.

Dympna McShane

- The observer's home is located on a haul route - Road L-3510-0 which extends from the old N2 to Latnakeliy.
- The road is a small one and in many places two vehicles cannot pass. The road also has at least three dangerous bends. The entrance to my home is at one of these bends.
- The bends and the narrowness of the road and the size of the construction vehicles will make it too dangerous for me to walk from my home as I regularly do. It will also be dangerous for me to drive onto and on the road. It simply will not be safe.

Applicant's Response:

- 96 The proposed haul route along the L3510 as shown on Figure 13.1 (EIS Volume 3C) is capable of facilitating the construction of 15 no. towers and 2 no stringing areas. However in order to reduce disruption along the L3510 alternative feasible routes are available and presented on revised Figure 13.1 (EIS Volume 3C), which is presented in **Appendix 18.1** of this report.
- 97 EIS Volume 3C (Appendix 13.3 and Table 13.5 section 13.5.2.1) reports that a maximum daily peak of 46 vehicle movements will be generated by the construction of a tower foundation and in particular during the more intensive period of operation when pouring the concrete foundations. These 46 vehicles will be distributed throughout the 8 hour working day, with the busiest period being the arrival of staff and initial delivery vehicles in the AM, when it is likely that a maximum of 2 staff vans / 4 x 4s arrive to the site and 3 concrete lorries and 2 to 3 tipper lorries arrive and depart from the site. This will generate a maximum of 14 vehicles in the peak hour to / from the site. These 14 vehicles in any one hour will also be distributed throughout the hour. The risk of road users meeting multiple construction vehicles along the road at any one time will be low.
- 98 Appendix 13.3 of EIS Volume 3C also reports the estimated maximum daily traffic during tower erection of 14 vehicle movements. These 14 vehicles will be distributed throughout the 8 hour working day, with the busiest period being the arrival of staff and initial delivery vehicles in the AM, when it is likely that a maximum of 3 staff vans / 4 x 4s arrive to the site and 1 delivery lorry arrives and departs from the site. This will generate a maximum of 5 vehicles in the peak hour to / from the site. The risk of road users meeting multiple construction vehicles along the road at any one time will be low.
- 99 Outlined in section 4.5 of the Outline Traffic Management Plan (EIS Volume 3B Appendix 7.2) Drivers of construction vehicles / HGVs will be advised that vehicular movements in

sensitive locations, such as local community areas, shall be restricted to 60 km/h. Special speed limits of 30 km/h shall be implemented for construction traffic in sensitive areas such as school locations.

- 100 As part of the works, the contractor will be required to prepare a detailed traffic management plan and will be required to liaise with land owners to advise them of programme and traffic issues. Early consultation will ensure that programming to avoid conflicts with harvesting operations can be considered where practicable.

19 CULTURAL HERITAGE

19.1 OVERVIEW

- 1 Cultural Heritage was raised as an issue in approximately 375 no. of submissions/observations. These submissions are listed in Table 42 of **Appendix 1.2** of this report.
- 2 The topic of Cultural Heritage considers the potential impacts of the proposed development on the cultural heritage of the study area which include archaeological heritage, architectural heritage, underwater cultural heritage, cultural landscapes and intangible cultural heritage such as folklore. We have identified a number of recurring issues raised in the submissions. The breakdown of particular sub-issues and the number of submissions / observations raising these sub-issues is listed in Table 43 of **Appendix 1.2** of this report.

19.2 RESPONSE TO GENERAL ISSUES RAISED

- 3 The topic of Cultural Heritage is evaluated in Chapter 14 Cultural Heritage, Volumes 3C & 3D of the EIS. The relevant section, chapter or figure of the EIS which addresses the issues raised in the submissions is identified below in response to general issues raised by the observers.

19.2.1 Submissions relating to the Potential Negative Impacts on the Cultural Heritage Resource

- 4 There are a number of submissions, which note potential negative impacts on the existing Cultural Heritage resource within the study area.
- 5 In a submission from NEPP (SI-2015-0332, section 3.1.3) the existence of recorded monuments is noted, it is stated that the proposed development will occur 'in areas that are likely to be prone to sub-surface archaeology'. The submission also states that the proposed development will lead to loss or cause damage to the character, the principal components of, and the settings of parks, gardens and demesnes of special historic interest (3.1.7). The submission states that the development would result in direct adverse effects to protected archaeological sites, monuments and their setting (3.1.8).
- 6 A submission from the Meath Archaeological and Historical Society (SI-2015-0337) states that 'it is hard to see what steps EirGrid have taken to mitigate the human, environmental and landscape impacts, particularly in the ZAA of Teltown and the townlands of Brittas, Cruicetown, Rahood and Raffin, adjacent to Nobber.'

Applicant's Response:

- 7 The Cultural Heritage section of the EIS for the proposed North South 400 kV Interconnection Development identified the location and composition of Cultural Heritage Sites within the wider study area and assessed both the direct and indirect impacts of the development on the receiving cultural heritage resource. From the outset, the Study Team

have been mindful of the wealth of the Cultural Heritage within the study area. The purpose of the initial constraints study was to avoid any direct impacts on the known cultural heritage resource and to minimise potential impacts on the setting of cultural heritage sites including the regions premier archaeological ensemble, the Brú Na Boinne complex, featured on the UNESCO World Heritage List. Other sites of international importance including the Battlefield of the Boyne, Mellifont Abbey, The Hill of Slane, The Slieve Breagh archaeological complex, the Tara Skyrne Valley, Bective Abbey, the Hill of Ward and the Lough Crewe Megalithic Tomb Cemetery were also considered. Other significant constraints included the historic towns of Drogheda, Navan, Nobber, Kells, Trim and Athboy. The constraints study also took into account all previously recorded archaeological sites and monuments and protected structures.

- 8 The preparation of Chapter 14 was carried out in accordance with the relevant codes of practice as well as other relevant international, national and regional policies (set out in relevant statutory plans), sources and guidance as listed in Section 14.1.1 (Volumes 3C & 3D) of the EIS.
- 9 Evaluation of both the direct and indirect impacts of the proposed development on the archaeological, architectural and cultural heritage resource in the vicinity of the proposed development was carried out. From the outset, available inventories relating to cultural heritage, as summarised in Section 14.2.1, Volumes 3C & 3D of the EIS and set out in more detail in Appendices 14.1 of Volumes 3C & 3D, were used to evaluate and minimise any potential impacts.
- 10 Historic mapping, orthophotography and LiDAR (including high-quality aerial imagery and digital terrain modelling in sensitive areas) were also used to further evaluate the potential impacts of the proposed development.
- 11 All recorded and previously unrecorded cultural heritage sites identified were individually assessed for direct and indirect impacts during the construction and operational phases of the proposed development.
- 12 The evaluation considered in detail an area within approximately 2km of either side of the proposed line route but also had regard to National Monuments in State Care, National Inventory of Architectural Heritage (NIAH) sites rated as being of National Importance and other relevant cultural heritage sites within 5km either side of the alignment and in the wider area.
- 13 Further sources were consulted including documentary and historical sources, the National Museum of Ireland's Finds Register and the results of previous excavations made available by the National Roads Authority and excavations.ie. Having compiled an extensive understanding of the archaeological, architectural and cultural landscape through which the proposed development would pass, field surveys were undertaken as detailed in Section 14.2.1 of the EIS.
- 14 Although an important factor in the routing of large scale linear infrastructure, cultural heritage is only one of many constraints involved in determining the final route of a proposed development. The line route has succeeded in not directly impacting on any recorded sites that feature in the standard baseline inventories. While it is acknowledged

that there will be an indirect impact of the overall scheme on the Cultural Heritage Resource, the scale of these impacts has been mitigated in part by avoiding wide viewsheds and using topographical features and natural screening. Further mitigation measures have been outlined in the EIS which address the potential impacts upon Cultural Heritage Sites, and the implementation of these will be overseen by a Project Archaeologist on behalf of EirGrid / ESB in consultation with the DAHG.

- 15 It is acknowledged that there is potential for encountering previously unknown cultural heritage sites. It is noted in Volume 3B, Chapter 11, Summary of Mitigation measures (Table 11.1, part 12.1) that in areas of moderate archaeological potential, excavations associated with construction works and / or facilitating access to the construction site and / or stringing areas will be monitored by a suitably qualified archaeologist. In the event that archaeological deposits are discovered, work in the area will cease immediately and the archaeologist will liaise with the National Monuments Service of the DAHG and the National Museum of Ireland.
- 16 It is also noted in Table 11.1, part 12.1 that best practice in areas of high archaeological potential demands caution, to ensure that archaeological deposits are identified as early as possible, thereby ensuring that any loss from the archaeological record is minimised. This is why it is a general standard condition of permission for development that on-site archaeological monitoring is undertaken. EirGrid considers it entirely appropriate for An Bord Pleanála to include such a condition, should it ultimately determine to approve the proposed development.
- 17 It should be noted that, when compared to other types of linear infrastructure development, such as roads and pipelines, the proposed development has a relatively small physical footprint where direct, physical impacts can arise, consisting primarily of tower foundations and guarding areas. By way of example, there are approximately 3 towers per kilometre within the MSA. It has been possible to avoid direct, physical impacts on the upstanding remains of designated heritage sites.
- 18 It is acknowledged in the EIS that fifteen previously recorded archaeological monuments may be directly physically impacted on during the construction stage. These impacts relate to construction traffic passing in close proximity to archaeological monuments (<200m) or where there is the potential that associated archaeological remains could be impacted upon. It should be noted that these impacts will not result in damage to visible or upstanding archaeological features but may affect sub surface deposits associated with the monuments.
- 19 Recommendations to prevent or mitigate these impacts include demarcating appropriate buffers around sites, supervision of vegetation clearance, and/or archaeological testing or monitoring of groundworks.
- 20 There are also a number of tower locations where there are no impacts on specific archaeological monuments but where there is the potential of encountering archaeological deposits due to the sensitivity of the surrounding area, Table 14.13 in Volume 3C and Table 14.15 in Volume 3D details these tower locations.

- 21 It is also acknowledged in the EIS that four architectural heritage sites could experience potential direct, physical impacts. These impacts are all related to construction traffic passing through demesne landscapes with associated protected structures at Brittas, Dowdstown, Mountainstown and Dunderry.
- 22 Appropriate mitigation at these locations will ensure there are no direct physical impacts to any Record of Protected Structures sites or structures.
- 23 Construction work and access will be required within six demesnes that are listed in the National Inventory of Architectural Heritage (NIAH) garden survey; namely Brittas, Diméin Bhaile Ghib (Gibstown Demesne), Mountainstown, Philpotstown, Tailtin (Teltown) and Rahood. There are no predicted construction phase direct physical impacts on any associated demesne structures, although it is noted that the proposed development does pass over the avenue to Brittas House and treelines and woodland will be impacted on. These potential impacts and recommended mitigation measures are detailed in Section 14.5.3.4 of Volume 3D.
- 24 Given the upstanding linear form of the proposed development it is acknowledged that the greatest potential for impacts constitutes impacts on the setting of cultural heritage sites. Methodologies were introduced from the earliest stages of constraints mapping and route selection to minimise these impacts. This work, as well as considering individual cultural heritage sites had regard for sensitive landscapes including the World Heritage Site of Brú Na Bóinne, candidate world heritage sites, landscape conservation areas, architectural conservation areas, protected structures and gardens and demesnes. The criteria used to evaluate these impacts are summarised in Sections 14.5.2 of Volumes 3C & 3D of the EIS.
- 25 Sites where it was considered that the significance of the impact on their setting in the Study Area would be moderate or greater include 40 recorded archaeological monuments, 6 demesnes and 3 protected structures. Within the Meath Study Area it is noted that the development, whilst in general only having a slight impact on the setting of individual sites that make up the Teltown Zone of Archaeological Amenity (ZAA), will have a moderate impact on the setting of the ZAA as a whole. Of note, there will be a significant impact on the setting of Brittas demesne landscape. Impacts are detailed in Section 14.5.4.1 and 14.5.4.2 of Volume 3C of the EIS and Sections 14.5.4.1 and 14.5.4.2 of Volume 3D of the EIS.

19.2.2 Potential Impacts on the Settings of Cultural Heritage Sites

- 26 There are a number of submissions that relate to potential impacts on the settings of cultural heritage sites some of which state that the impacts on monuments and their settings have not been properly considered as no imagery suitable has been provided and the cumulative impact between sites has not been addressed.

Applicant's Response:

- 27 Given the upstanding linear form of the proposed development it is acknowledged that the greatest potential for impacts constitutes impacts on the setting of cultural heritage sites. Methodologies were introduced from the earliest stages of constraints mapping and route selection to minimise these impacts. This work, as well as considering individual cultural heritage sites had regard for sensitive landscapes including the World Heritage Site of Brú

Na Bóinne, candidate world heritage sites, landscape conservation areas, architectural conservation areas, protected structures and gardens and demesnes. The criteria used to evaluate these impacts are summarised in Sections 14.5.2 of Volumes 3C & 3D of the EIS.

- 28 Sites where it was considered that the significance of the impact on their setting in the Study Area would be moderate or greater include 40 no. recorded archaeological monuments, 6 no. demesnes and 3 no. protected structures. Within the Meath Study Area (MSA) it is noted that the proposed development, whilst in general only having a slight impact on the setting of individual sites that make up the Teltown Zone of Archaeological Amenity (ZAA), will have a moderate impact on the setting of the Teltown ZAA as a whole. Of note, there will be a significant impact on the setting of Brittas demesne. Impacts are detailed in Section 14.5.4.1 and 14.5.4.2 of Volume 3C of the EIS and Sections 14.5.4.1 and 14.5.4.2 of Volume 3D of the EIS.
- 29 As regards the submission that impacts on monuments and their settings have not been properly considered as no imagery suitable has been provided and the cumulative impact between sites has not been addressed, please refer to the response to Monaghan County Council in **Section 19.3.4** of this document.

19.2.2.1 Potential Impacts on the Teltown/Donaghpatrick area

- 30 There have been a number of submissions in relation to the potential impact of the proposed development on the Teltown ZAA and the Donaghpatrick area. The relevant submissions are summarised below.
- 31 Appendix 16 of the submission from the North East Pylon Pressure (SI-2015-0332), a letter submitted by Professor George Eogan, addresses impacts on Teltown and Donaghpatrick. It notes that there is potential for the discovery of previously unknown archaeological sites and suggests that 'it is vital that the landscape be left undisturbed so as to allow the discovery of further monuments which are now invisible'. It concludes that the "erection of pylons with their massive visual and destructive intrusion on this unspoilt landscape would be a travesty and an act of crass irresponsibility".
- 32 Appendix 17 of the submission from the North East Pylon Pressure (SI-2015-0332), a letter submitted by the Teltown/Donaghpatrick Heritage Group, also addresses the area of Teltown and Donaghpatrick. The submission states that the effectiveness of the screening provided by trees along the western side of Rath Airthir and St. Patricks Church is grossly exaggerated. It suggests that the area be protected from intrusive infrastructure so that it can be enjoyed and explored by future generations. The submission also suggests that an underground solution would have no impact on cultural heritage.

Applicant's Response:

- 33 A detailed and comprehensive evaluation report of the Teltown ZAA is published in full in Appendix 14.5, Volume 3D Appendices of the EIS. It is noted that Teltown or Tailteann has no legal designation and is not mentioned in the cultural heritage context in the Meath County Development Plan 2013-2019. It is mentioned in a list of tourist attractions in Meath, *'Other tourist attractions based on Meath's archaeological and historical heritage include the Royal site of Tara, Kells, Trim castle, Loughcrew, Tailteann, the Hill of Ward, the Christian site at Slane, Donaghmore, Killeen, Dunsany and Duleek, monastic ruins at Bective and stately homes throughout the county.'* There are no policies or objective relating to Teltown in the Meath County Development Plan 2013-2019.

- 34 It is mentioned in the introductory historical background to the Meath Landscape Character Assessment which states that:

"Prior to the arrival of St Patrick many features of the landscape had significance as places of assembly in pagan rites and traditions. The Hill of Ward and Teltown, for example, were "celebrated for their royal palaces, their solemn conventions, their pagan games and their druidic ceremonies, and in Christian times were sanctified by the labours of St Patrick and St Brigid" (online edition of 'The Catholic Encyclopaedia Vol. X' (1911) Robert Appleton Company)."

- 35 Within the Meath County Development Plan Landscape Character Assessment, the area is located within the Blackwater Valley Landscape Character Area (LCA), but Teltown or Tailteann are not referred to specifically. The LCA is rated as being of regional importance with a very high value and high sensitivity.

- 36 Notwithstanding its lack of reference in the LCA, Teltown is regarded by the DAHG as an archaeological landscape. A Zone of Archaeological Amenity (ZAA) had been delineated on a map prepared by the National Monuments Service. Geographically, the ZAA was bounded to the south by the Blackwater River, to the north by the R163, to the west by both the N3 and a third class road between Bloomsbury Crossroads and Oristown, and to the east by a road linking Donaghpatrick Bridge with Crasulthan Crossroads.

- 37 Within the Landscape Character Assessment, the area is not differentiated from its surroundings, unlike other significant cultural heritage landscapes found within County Meath which discuss at length the historic sites, their significance and tourist opportunities. These include;

- LCA 5 – Boyne Valley
- LCA 12 – Tara Skryne Hills
- LCA 14 – Royal Canal
- LCA19 – Lough Crew and the Slieve na Callaigh Hills

- 38 Within the region there are two distinct archaeological areas. The area to the west can be credited to O'Donovan and focuses on a number of monuments including Rath Dhu, The Knockauns, Cromwells road and St. Catherines church (since replaced). To the east is the village of Donaghpatrick with its church, graveyard and Rath Airthir, a trivallate fort, all of which are highlighted in the Landscape Character Assessment.

- 39 Between Towers 303 and 311 the proposed line route passes through the ZAA. The proposed line route bisects these two areas and comprises nine towers that cross the river Blackwater from the south and continue northwards traversing two roadways, the Donaghpatrick to Oristown road and the R163 Kells Slane road. All the towers avoid directly impacting on any recorded monuments. However, there will be impacts upon the setting of cultural heritage sites, and these impacts were the subject of a site specific report contained in Appendix 14.5 of Volume 3D of the EIS. The report notes that impacts on the setting of archaeological monuments within the ZAA are limited, with Teltown Church and Graveyard being the only archaeological monument within the Teltown ZAA that experiences an impact on its setting of moderate significance. All other archaeological monuments within the ZAA experience impacts on their setting of a significance less than moderate. The works were deemed to have a moderately negative impact upon selected

views, not associated with known archaeological monuments, from within and surrounding the ZAA.

- 40 In cognisance of the importance of the area, a LiDAR survey was undertaken of the entire Teltown ZAA to assist in identifying previously unrecorded archaeological sites in the vicinity of the proposed development that could be impacted upon. The survey was undertaken in October 2013 and both Digital Terrain Models (DTM) and Digital Surface Model (DSM) data produced at 25cm and 12.5cm resolutions. A possible ditched enclosure and the possible location of the artificial lakes referred to by O'Donovan were identified during analysis of the DTM (for further details refer to the Teltown Appraisal Report in Appendix 14.5, Volume 3D Appendices of the EIS). The possible enclosure (MSA_CHS070) is located 120m to the west of the proposed development (Tower 304) while the possible location of the artificial lakes (MSA_CHS073) is located 280m to the west of the proposed development (Tower 310).
- 41 The detailed evaluation found that there will be no direct physical impact upon previously recorded archaeological, architectural or cultural heritage sites within the ZAA as a result of the proposed development. There is the potential that previously unrecorded archaeological deposits could be impacted upon and mitigation measures are recommended to ensure that these impacts are kept to a minimum. These impacts were the subject of a site specific report (Volume 3D Appendix 14.5 MSA Teltown Impact Assessment) and were deemed to have a moderately negative impact upon selected views from within and surrounding the ZAA.
- 42 In relation to Teltown, specific mitigation measures have been formulated and these are detailed in the EIS Volume 3D Section 14.6.1.1.
- 43 Regarding screening the views below are taken from St. Patricks Church looking west, a view from Donaghpatrick to the north towards St. Patricks Church and image taken in winter months looking north west to Rath Aithir, showing the extent of screening at these locations. Please also refer to Volume 3D, Photomontage 56 which is taken from Donaghpatrick bridge looking north west towards St. Patricks Church and Photomontage 57, taken from the south western boundary of Donaghpatrick Church looking west. Note that all of these pictures were taken during the winter months.





- 44 As stated in Appendix 10.2 Partial Undergrounding Report 2015 of the EIS, while it is not possible to ascertain for certain the potential for impacting directly on previously unknown archaeological remains, it is nonetheless considered that there is a greater risk of impacting on these remains during construction of an UGC than the proposed OHL. Any direct impact would also be permanent and irreversible. Although the OHL option would have a greater impact on the setting of cultural heritage sites, it would be preferable to an UGC option at this location as it is likely to generate fewer direct, physical, irreversible impacts on the non-renewable cultural heritage resource.
- 45 In relation to undergrounding in general, the Framework and Principles for the Protection of the Archaeological Heritage (published by the then Department of Arts, Heritage, Gaeltacht and the Islands in 1999) states: *“Preservation in situ of archaeological sites and monuments must be presumed to be the preferred option.”* Although placing the proposed infrastructure underground would reduce the impact upon the setting of the cultural heritage of the region, such undergrounding would not accord with this stated policy.
- 46 The physical area impacted upon by a typical tower associated with an overhead line (such as is being proposed) is a fraction of the area that would be impacted upon by

underground cables and ancillary development associated with such undergrounding. Accordingly, the impact of undergrounding the proposed transmission line and associated infrastructure would have an impact on the archaeological resource of a much greater order of magnitude than the proposed overhead line development.

- 47 Placing the proposed infrastructure underground alongside existing road infrastructure would also involve extensive excavation and ground disturbance. There is still a much greater potential for direct physical impacts on archaeological deposits as well as vernacular features and protected structures such as bridges, stone walls, gates and street furniture.

19.2.2.2 Potential Impacts on Bective Abbey

- 48 There have been a number of submissions which state that the proposed development will have an impact on Bective Abbey.

Applicant's Response:

- 49 It is acknowledged in the EIS that there will be a negative impact on the setting of a number of cultural heritage sites in the vicinity of the proposed development. In relation to Bective, as described in Table 14.69 and Table 14.84 of Volume 3D of the EIS, it is acknowledged that there will be a permanent, negative impact of moderate significance on the setting of Bective Abbey during the operational phase of the development.

- 50 It should be noted that the view presented in Volume 3D Photomontage 64 and Volume 3D Photomontage 65 depict the greatest potential impact from the proposed development, having been taken from a small platform at the top of the stairs on the south facing façade. All other views towards the proposed development will be from an elevation approximately 2m lower. Operation phase impacts relating to Bective Abbey are discussed in Volume 3D Table 14.69 and 14.84. Further information regarding Bective Abbey is provided in **Appendix 19.1** of this document.

19.2.3 Potential Impacts on Brittas House and Demesne

- 51 There have been a number of submissions which state that the proposed development will have an impact on Brittas House and Demesne.

Applicant's Response:

- 52 The proposed development passes through the western portion of Brittas demesne landscape (Garden Survey Ref: ME-35-N-806867) approximately 420m to the west of Brittas House (RPS No. MH005-105). It is acknowledged that the proposed development passes over the avenue to Brittas House and treelines and woodland will be impacted on. These potential impacts and recommended mitigation measures are detailed in Section 14.5.3.4 of Volume 3D. Impacts on setting relating to the Brittas demesne landscape are discussed in Volume 3D Table 14.78. Construction phase impacts relating to Brittas Demesne are discussed in Volume 3D Tables 14.42 and 14.46, and operational phase impacts are discussed in Volume 3D Table 14.78. More detail regarding the predicted impacts on setting is also provided in **Appendix 19.1** of this document.

- 53 A number of options have been reviewed in the course of the project in relation to Brittas:
- It is noted in the Final Re-evaluation Report (2013) that a route was proposed to the west of the Brittas demesne. From a cultural heritage perspective, the alternative route was not as favourable, as it would have been crossing an open landscape and would have impacted on the setting of a number of National Monuments in the Ownership or Guardianship of the State, as well as two graveyards.
 - An option was reviewed internally that looked at moving the proposed development to the west of the road running along the western boundary of Brittas and so outside of the demesne landscape. This option would have introduced a number of issues in relation to cultural heritage due to the change in elevation that would have resulted. The increased elevation would have increased the impact on the setting of Cruicetown Church and Cross (National Monument No. 264) and a number of archaeological monuments and protected structures associated with Nobber.
 - An undergrounding option in relation to Brittas was also reviewed in Appendix 10.2 Partial Undergrounding Report 2015 of the EIS and, from a cultural heritage perspective, it was concluded that a UGC route option would be slightly preferred, but overall the report concluded that there were 'no impacts of such significance envisaged, including those on landscape, which would introduce the need for consideration of partial undergrounding for the proposed development at the location of Brittas Demesne'.
- 54 The most significant impact will be on the visibility of the OHL on entering or leaving the demesne via the entrance avenue to Brittas House. The clearance of existing vegetation will be minimised in this area and in consultation with the landowner appropriate screening will be planted on either side of lane to limit the views towards the proposed development.
- 55 The Brittas estate comprises a private period property with associated outbuildings set in rolling parkland with mature woods enclosed by a demesne wall and field boundaries. It is acknowledged in Chapter 14, Table 14.78 of Volume 3D of the EIS that the line route will directly impact on the demesne, described in the NIAH garden survey as having its main features substantially present-with some loss of integrity. The demesne will contain five towers running north-west / south-east to the west of the property, crossing over the entrance driveway to the principal buildings. The main house is well screened by woodland. The sensitivity of the demesne to impacts was considered very high and the magnitude of the impact substantial. The overall impact on the setting of the demesne was appraised as significant. The impact on Brittas Demesne was the result of a number of constraints including the general topography, the presence of Cruicetown National Monument to the south-west and Moynagh lough and Nobber to the east.
- 56 To the west of the estate, along the roadway the topography rises relatively steeply to a hilltop enclosure in Cruicetown with commanding vistas. To the south east is Moynagh Lough and Nobber town. The natural geographic constraints in this area limited the options for the line route.

19.2.4 Compliance with Heritage Policies within the Meath County Development Plan

- 57 There are a number of submissions that claim the EIS has not fully complied with Heritage Policies within the Meath County Development Plan.

Applicant's Response:

- 58 It has been suggested that the EIS is in direct conflict with a number of the policy objectives and aspirations of the current Meath County Development Plan (2013-2019) whose stated aim is to protect, conserve and enhance buildings, areas, structures, sites and features of special, architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Section 9.6 and 9.6.1 of the Meath CDP57 outlines policies and objectives in relation to Cultural Heritage, designed landscapes, historic parks, gardens and demesnes. In particular CH OBJ 22 & 23 discourage development that would lead to a loss of, or cause damage to, the character, the principal components of, or the setting of historic parks, gardens and demesnes of heritage significance.
- 59 These policies however are not mutually exclusive and in consideration of proposed developments that potentially impact on the cultural heritage of the region the planning authority will seek appropriate impact assessments.
- 60 The Cultural Heritage section of the EIS addressed these concerns, acknowledging that there will be limited impacts and, in consultation with the relevant bodies, proposed mitigation of same. These impacts and proposed mitigation measures, are detailed in Section 14.5.4.1 and 14.5.4.2 of Volume 3C of the EIS and Sections 14.5.4.1 and 14.5.4.2 of Volume 3D of the EIS. Accordingly, the relevant sections of the EIS take account of, and comply with, the material policies as set out in the Meath County Development Plan.

19.3 RESPONSE TO SPECIFIC ISSUES RAISED BY PRESCRIBED BODIES**19.3.1 Department of Arts, Heritage and the Gaeltacht (SI-2015-0207)****19.3.1.1 Potential Impacts on Archaeology - Setting**

- 61 In relation to impacts on setting, the DAHG notes that there is a wide variety of monuments in both the CMSA and the MSA, including megalithic tombs, a stone group, enclosures and ringforts etc. It is noted that that many of these site types have their own architectural and visual characteristics and make their own visual statement against which the visual impact of the pylons need to be assessed. The submission notes that there are National Monument sites in the Ownership or Guardianship of the Minister for Arts, Heritage and the Gaeltacht which not only form important parts of the archaeological landscape but also have significant tourist amenity value. This includes sites such as Bective Abbey, the Hill of Tara, and the landscape of Teltown, all located in County Meath. Given the nature of the assessment of visual impacts, and without the Department's own independent evaluation, the submission states that it is not clear if some of these impacts would be acceptable.
- 62 The submission states that mitigation of impacts on the setting has not been identified or appropriately specified. Furthermore, the submission states that the future amenity potential of the sites involved has not been assessed. With regard to visual impacts and impacts on the setting of archaeological monuments, the Department requests further information on the extent of impacts on individual monuments and complexes, in particular the impact on the amenity value of sites in the Ownership or Guardianship of the Minister for Arts, Heritage and the Gaeltacht. For example, the photomontage (Volume

⁵⁷ Meath County Development Plan 2013-2019, Meath County Council.

3D, No. 68) that describes the view from the Hill of Tara is taken from one location on the hill. The Department request that views from other locations on the hill are also modelled and assessed.

Applicant's Response:

- 63 Further information on the extent of impacts on individual monuments and complexes, in particular the impact on the amenity value of sites in the Ownership or Guardianship of the Minister for Arts, Heritage and the Gaeltacht, along with further information on the impacts on archaeological monuments where there will be an impact of moderate and greater is provided herein as **Appendix 19.1**.
- 64 In the response prepared by the landscape consultant (**Section 16.3.2** of this document) the following is stated: *The viewpoint for Photomontage 68 is located on top of one of the most prominent and elevated earthworks within the complex of the Hill of Tara and in close proximity of Lia Fáil. The panoramic view is orientated to the west and southwest towards the proposed transmission line development. Meath County Development Plan 2013-2019 lists the Hill of Tara as a designated protected panoramic viewpoint and prospect (Viewpoint 44) of national significance. It also states that views from the Hill of Tara are "across settled landscape with visible development including foreground powerlines, agricultural buildings, houses, quarries and roads." It also states that views to the west contain "other prominent hilltops visible at great distance" and that the "foreground contains extensive areas of hedgerows and woodland".*
- 65 *Given the location, orientation and elevation of Photomontage 68, it is considered that it illustrates the most open view of the proposed development from within the Hill of Tara complex. The nearest tower will be located at 6.29km in the distance from this viewpoint. Volume 3D, Chapter 11 Landscape, Appendix 11.1 Tables – Landscape Evaluation MSA, Table 11.22 – Summary of residual visual effects, Page 22 states that the magnitude of change and the impact from the proposed development on Scenic Viewpoint 44 (Hill of Tara) is negligible and therefore not significant. Additional photomontages from the Hill of Tara, which would be equally open but generally less elevated, would not provide further information for the assessment of potential impacts of the proposed development. Again, it is important to note the role that photomontages play as a tool in the visual assessment; the detailed appraisal of visual impact, including at the Hill of Tara is contained in the EIS.*
- 66 The Department in discussing National Monument sites in the Ownership or Guardianship of the Minister for Arts, Heritage and the Gaeltacht includes the landscape at Teltown. Having reviewed National Monuments in State Care: Ownership & Guardianship for County Meath (2009)⁵⁸ there is no mention of either the Teltown Landscape or any of the archaeological monuments that are contained within it. Nonetheless, given the mythological, and archaeological importance of the area a detailed appraisal was undertaken and is contained in Volume 3D Appendix 14.5 of the EIS. Further information on the extent of impacts on Teltown is provided herein as **Appendix 19.1** and **Section 19.2.2.1** of this document.
- 67 For the most part the impacts of the proposed development comprise impacts on the settings of monuments. As noted by the Meath Conservation Officer in submission SI (2015)-0216, in general the avoidance strategy has been successful. As has been noted by the Department in their submission relating to architecture, and in the EIS (Volume 3C, Table 14.50), there are competing issues between maintaining a significant existing view to

⁵⁸ National Monuments in State Care: Ownership and Guardianship, Meath. DAHG, 2009

and from a cultural heritage site and screening a site from an impact on its setting (see also **Section 19.3.1.4** of this document).

19.3.1.2 Potential Impacts on Archaeology - Other

68 The Department notes that at one location to the west of Tara the proposed line passes within 250m of significant crop marks that indicate an extensive subsurface barrow complex (a Bronze Age Cemetery). These sites, located in the townlands of Balbrigh and Bective, have not been mentioned or identified in the EIS. The submission notes that it is possible that this complex of monuments could extend in the direction of tower No. 351. The cropmark enclosures and ringditches appear on Google Imagery taken on the 12th July 2013. The submission suggests that this may be indicative of the fact that the most recent aerial coverage has not been analysed by the EIS archaeological consultants. The Department seeks clarification on the extent of research carried out on the Google Earth coverages and if it is proposed to reassess the Google Earth material if it has not been analysed as part of the EIS.

Applicant's Response:

69 The complex of previously unrecorded sites is noted in detail in Volume 4, Appendix D, Volume 3 Appendices, Appendix 10.2 Partial Undergrounding Report 2015 V1 .pdf (Page 102). Even though at the time of the preparation of the partial undergrounding report (Feb to March 2015) the EIS was well advanced in its completion, a detailed review of the new Bing and Google aerial photography was undertaken to see if there were other previously unrecorded sites in the vicinity of the scheme. No other sites were noted. A review of the EIS chapter at the time showed that archaeological testing had been recommended for Tower 351 and monitoring was recommended for Tower 352 (the nearest tower to the cropmarks), due their proximity to an enclosure (SMR No. ME037-022).

19.3.1.3 Potential Impacts on Architecture – Built Heritage Features

70 The Department suggests that the protection of upstanding structures be assessed by a conservation architect or conservation engineer where works are required close to traditional walls, bridges and farm buildings.

Applicant's Response:

71 In line with the Code of Practice between the National Monuments Service of the DoEHLG (now the DAHG) and ESB Networks, 2009, and as addressed above in terms of complying with any relevant condition of approval of the proposed development, a project archaeologist will be appointed to oversee the effective implementation of the recommended mitigation strategies. Where works are required close to traditional walls, bridges and farm buildings a conservation architect or conservation engineer will fulfil this role.

19.3.1.4 Potential Impact on Architecture - the Setting of St. Patrick's Church, Ardragh

72 The Department notes that there will be a significant impact on St. Patrick's Church of Ireland, Ardragh, Co. Monaghan (RPS no. 41402713, NIAH no. 41402727) and that no specific mitigation measures are recommended to ameliorate this impact. The submission recommends that the Board considers whether screening by planting should be

conditioned, given that it may have to be specially designed in light of the competing issue of the significant view and indeed that such planting would be a matter of interest to the relevant stakeholders.

Applicant's Response:

- 73 As has been noted by the Department, and in the EIS (Volume 3C, Table 14.50), there are competing issues between maintaining a significant view and screening the proposed development from an impact on its setting. It is noted that there is existing vegetation along the boundary between the churchyard of St. Patrick's Church of Ireland Ardragh (RPS No. 41402713, NIAH No. 41402727] and the proposed development that is trimmed low to allow the view to the west to be appreciated. In the absence of screening the residual impact will be as stated in the EIS, a direct, negative, moderate to significant impact on the setting of the church. Should screening be used this will still impact on the setting of the site, having an indirect, moderate to significant impact on the church.



Figure 19.1 View from St. Patrick's Church looking west

19.3.1.5 Potential Impact on structures of Architectural Heritage Interest

- 74 The Department also notes that two structures of architectural heritage interest in the adjoining townland of Corvally, namely Corvally Presbyterian Church (NIAH No. 41403005) and the former Corvally School (NIAH No. 4143005) are not included in the schedule of buildings in appendix 14.3 Architectural Heritage', although the nearby former manse (NIAH No. 41403014) is included. The Department suggests that this appears to be an oversight, given that the former school appears in Photomontage 30 Panoramic. The viewpoint for this is at a nearby road junction, so it is unclear what the impact of the power line (in the vicinity of Towers 193 and 194) may have on Corvally Presbyterian Church and School. The submission requests that this is clarified by further information.

Applicant's Response:

- 75 Corvally Presbyterian Church and the former Corvally National School are included in Volume 3C Appendix 14.3, Architectural Heritage. Although the sites are both named after the townland of Corvally, they are actually located in the adjacent townland of Shanco and as such are listed accordingly in the list of architectural sites which is compiled alphabetically on a townland basis. The sites were assessed during the course of the EIS and the impact on these sites was determined to be slight to moderate. In line with EPA

guidance⁵⁹ the final EIS focused on likely significant impacts and only impacts on setting of moderate or greater are presented.

19.3.1.6 Potential Impact on Architecture – Demesnes

76 The submission notes that there will be impacts on a number of other named demesnes, and in a specific reference to Ardracchan House and demesne it is stated that it is not clear if the existing tree and wall screening is considered sufficient to mitigate these impacts or if further screening is needed. In the Departments view any mitigation of impacts on demesnes should be identified and appropriately specified.

Applicant's Response:

77 An imposing wall, approximately 3 metres high, extends along the entire western boundary of Ardracchan Demesne. This wall, associated with dense stands of deciduous trees along the western boundary and nearby field boundaries, effectively screens the proposed development from the grounds of Ardracchan during the summer months. During the winter months there may be views of the proposed development from some of the upper storey windows of the house through the branches of the trees.

78 As stated above further detail in relation to the Demesnes in the vicinity of the EIS where mitigation may or may be effective is provided in **Appendix 19.1**.

⁵⁹ Guideline on the Information to be contained in Environmental Impacts Statements, EPA, 2002



Figure 19.2 Aerial photograph of Ardraccon Demesne



Figure 19.3 Looking towards Ardraccon House from north (photo location depicted by red dot)

19.3.1.7 Potential Impact on Architecture-Bective Abbey

79 In addition, the submission states that the extent of the impact on the setting of Bective Abbey is unclear from the documentation submitted.

Applicant's Response:

80 It is acknowledged in the EIS that Bective Abbey is located approximately 920m to the east of the proposed development. As described in Table 14.69 and Table 14.84 of Volume 3D of the EIS, it is acknowledged that there will be a permanent, negative impact of moderate significance on the setting of Bective Abbey during the operational phase of the development.

81 The site is a well-known amenity with good signage directing visitors and has a very high sensitivity to impacts. In order to reduce these impacts the line route was located as far to the east as possible without compromising existing constraints provided by Trim Airfield to the west and the Draft Tara Skryne Landscape Conservation Area to the east. Approaching the abbey from the car park, the principal view is towards the western range of the Abbey and the Bridge to the south. From the Abbey looking west there will be as distant view towards the proposed development approximately 920m away.

82 This view contains a house, agricultural buildings, the new carpark, local road and existing overhead lines to the foreground with the proposed development in the background. The magnitude of the impact on the setting of the site was found to be modest. The overall significance of the impact on the setting of the site was found to be moderate.

83 It should be noted that the view presented in Volume 3D Photomontage 64 and Volume 3D Photomontage 65 depict the greatest potential impact from the proposed development, having been taken from a small platform at the top of the stairs on the south facing façade. All other views towards the proposed development will be from an elevation approximately 2m lower. Photographs to illustrate views from the top and bottom of the stairs are presented in **Appendix 19.1**. Operation phase impacts relating to Bective Abbey are discussed in Volume 3D Table 14.69 and 14.84.

84 Further detail in relation to the extent of the impact on Bective Abbey is provided in **Appendix 19.1**.

19.3.1.8 Further Information Request

85 In summary the Department requests that further information be sought on the visual impact of the proposed development at monuments in the Ownership or Guardianship that already have a high visual expression, existing visitor amenities or tourism potential.

Applicant's Response:

86 Archaeological monuments in the Ownership or Guardianship of the State that are located within 5km of the proposed development are listed in Volume 3D Chapter 14 Table 14.1. Details regarding the distances of these monuments from the proposed development are contained within Volume 3D Section 14.4.4.3 of the EIS.

87 Although Tara is located approximately 6 km from the proposed development, it was included in the appraisal of impacts on setting due to its status, and the fact that it is

included in the Tentative List of World Heritage Sites. Likewise Kells, located approximately 7km from the proposed development, was also reviewed.

- 88 Further information on the extent of impacts on individual monuments and complexes, in particular the impact on the amenity value of sites in the Ownership or Guardianship of the Minister for Arts, Heritage and the Gaeltacht is provided herein as **Appendix 19.1**.

19.3.1.9 Mitigation Measures - General

- 89 In relation to mitigation measures the submission recommends that all groundworks associated with construction works should be archaeologically tested or monitored, with the exception of areas where it is certain that there is no archaeological potential. Where buffer zones have been recommended these will be demarcated by a suitably qualified archaeologist.

Applicant's Response:

- 90 As noted above, EirGrid are willing to accept this recommendation, and consider this to comprise an appropriate condition of approval of the proposed development, should the Board be minded to Grant such approval.

19.3.1.10 Mitigation -Brittas Demesne.

- 91 As regards the setting of architectural heritage, it is noted in the submission that in section 16.12 of the Joint Environmental Report it is stated that *'while the proposed interconnector will not have a direct physical impact on the upstanding remains of any known archaeological sites or architectural features, it will have such an effect on a number of demesne landscapes. The impact on one of the demesne landscapes, Brittas, was found to be significant. A further three demesne sites will experience a moderate negative impact in terms of setting. In the case of Brittas it is indicated that some mitigation may be possible but this is not precisely defined.'*

Applicant's Response:

- 92 Further detail in relation to the Demesnes in the vicinity of the EIS where mitigation may be effective is provided in **Appendix 19.1**.

19.3.2 An Taisce (SI-2015-0209)

- 93 Under the heading of 'Considerations on Landscape Impact' An Taisce also deal with Cultural Heritage. Their submission states that:

- 94 'The proposed route affects the landscape setting of a number of country houses which are on the DAHG National Inventory of Historic Gardens and designed landscapes including:

- Whitewood, Nobber, ME-35-N801896
- Brittas House, Nobber, ME 35 –N806867
- Cruicetown, Kells, ME-35-N-793853.

Applicant's Response:

- 95 The proposed development passes approximately 1.63 km to the west of Whitewood House (RPS No. MH005-104) and approximately 850m to the west of its associated demesne landscape (Garden Survey Ref. ME-35-N-801886). Impacts on setting relating to the Whitewood House are outlined in Volume 3D Table 14.83 and Whitewood demesne landscape in Volume 3D Table 14.77. More detail regarding the predicted impacts on setting is also provided in **Appendix 19.1** of this document.
- 96 More detail regarding the predicted impacts on Brittas demesne and impacts on its setting is also provided in **Appendix 19.1** and **Section 16** of this document.
- 97 The proposed development passes approximately 930m east of Cruicetown Demesne (Garden Survey Ref. ME-35-N-793853) and 1.4km from Cruicetown House (RPS No. MH005-102). Given the scale of agricultural development in the immediate vicinity of the house, there will not be a significant impact on the setting of Cruicetown House and demesne. More detail regarding the predicted impacts on the setting of Cruicetown House and demesne is provided in **Appendix 19.1** of this document.

19.3.3 Cavan County Council (SI-2015-0214)

- 98 Cavan County Council states that 'there will be a significant visual impact on the area in the vicinity of Towers 225, 226, 227 and 228. The area around Muff Fair site and Muff Lough will be particularly negatively impacted upon, due to the proximity of the line and towers to existing residential houses and agricultural homesteads.'

Applicant's Response:

- 99 The annual horse fair at Muff originated in the later medieval period (1608) at a site known as 'Fair Green'. This site was an SMR but the record has been made redundant, i.e. it has officially been de-classified as an SMR by the relevant authorities. The fair currently takes place just northwest of the Fair Green on a site adjacent to the site of the no longer extant castle (SMR number CV035-0160001-). There are several traditions associated with the fair such as the 'bridal path' which links the landscape of Muff with Lough an Leagh. The cairns on Lough an Leagh hill are located between 2.4km and 2.9km west of the proposed development on a north south aligned ridge. At its closest point the proposed development will be approximately 200m from the current site of the fair running in a south west to north east direction. The site of the fair will not be physically impacted upon. Further details regarding the site of Muff Fair are contained within **Section 16.3.5** of this document. A photomontage of a view of the proposed development from the crossroads at Muff Fair is presented in the EIS (Volume 3C Photomontage 39).

19.3.4 Monaghan County Council (SI-2015-0215)**19.3.4.1 Potential Impact on Archaeology - Recorded Archaeological Sites**

- 100 The submission discusses the presence of clusters of megalithic monuments. The submission notes that there may be added potential for archaeological evidence of Neolithic settlement or other monuments in this area.

Applicant's Response:

- 101 It is acknowledged that there are clusters of megalithic monuments in the vicinity of the proposed line route from Cornmucklagh to Lennan and the vicinity of Lemgare. It is noted in Section 14.4.2.2 (para. 45) of Chapter 14, Volume 3C of the EIS that the lack of major infrastructural development within the CMSA accounts in part for the dearth of known Neolithic settlement sites.

19.3.4.2 Potential Impact on Archaeology - the Black Pigs Dyke.

- 102 The submission notes the presence of the Black Pigs Dyke in County Monaghan.

Applicant's Response:

- 103 As noted in the EIS a significant Iron Age site is the linear earthwork known as the Black Pig's Dyke. This site was believed to have been a single defensive earthwork running from Sligo to Louth and presently is untraceable for most of its length. Parts of the earthwork have been identified in County Cavan just east of Bellananagh (Waddell (1998)⁶⁰, Prehistoric Archaeology of Ireland) and in County Monaghan. There are no known upstanding remains of the Black Pigs Dyke in the context of the proposed development. It is acknowledged in the EIS that it is possible that the proposed line route may pass over the subsurface remains of this earthwork.

19.3.4.3 Potential Impact on Archaeology - Previously Undiscovered Archaeological Sites.

- 104 The submission notes that there may be many previously undiscovered archaeological sites in close proximity to the development. The submission also suggests that more information is required on these unknown sites (including Bronze Age sites) and the impact of the development on the nature of visual impacts on sites. The submission states that impacts on the monuments and their settings must be properly considered but no imagery suitable for assessing these impacts has been provided. The submission also suggests that no LIDAR images are supplied in the EIS.

Applicant's Response:

- 105 It is acknowledged that there may be previously undiscovered monuments (including Bronze Age sites) within the vicinity of the proposed line. Detailed mitigation measures are presented in the EIS to ensure that should archaeological deposits be discovered during the construction phase that they are dealt with in line with professional best practice in full consultation with the DAHG (Volume 3C Section 14.6 and Volume 3D 14.6). A response to impacts on setting is set out below.
- 106 As noted in Volume 3B, Section 1.5 of the EIS, LIDAR comprises high quality aerial imagery and digital terrain modelling in sensitive areas. Digital terrain modelling was undertaken of the entire Teltown ZAA and Volume 3D, Figure 14.18 shows a hillshade of LIDAR DTM which was used to identify new potential archaeological sites at this location. Furthermore, the LIDAR mapping used is represented in the CMSA and MSA plan and profile maps which are presented in Volume 1B, Figures MT-005-001 to MT-005-032.

⁶⁰ The Prehistoric Archaeology of Ireland, Waddell, J., 1998, Galway University Press

19.3.4.4 Potential Impact on Archaeology - Monuments and their Settings

107 The submission states that 'impacts upon monuments and their setting should be properly considered. No imagery suitable for assessing the impact upon the monuments has been provided in order to determine the nature and scale of these impacts, a photographic analysis of the nature of these impacts should be provided.

Applicant's Response:

108 A detailed methodology is presented in Volume 3C Appendices of the EIS, Appendix 14.1, which includes details regarding the methodology for evaluation of impacts on setting. As described in section 14.1.5.1 of Appendix 14.1, the evaluation of a sites 'Sensitivity to Impacts on Setting' was based upon the following criteria:

- degree of legislative protection;
- preservation / above ground expression;
- group value, including spatial and historic relationships between cultural heritage sites;
- documentary / historical / artistic references;
- amenity value (accessibility, published material such as maps / leaflets / guides, parking, visitor information etc.);
- viewer incidents (how many and what type people would be affected i.e. visitors to the site, walkers along mapped routes who's focus is on the landscape, travellers / commuters along nearby road / rail links
- landscape setting;
- other developments that have already impacted on the setting of the site; and
- views or vistas from the site and to the site from the surrounding landscape.

109 The sensitivity of a site to impacts on its setting is a function of many criteria, not least of which is the status a site holds in the psyche of the people. This can be largely intangible and therefore there is leeway allowed for in the evaluation of a site's sensitivity and also evaluation of the Significance of the Impact in the final Matrix to allow for a degree of professional judgement.

110 More detail regarding the predicted impacts on setting is also provided in **Appendix 19.1** of this document.

19.3.4.5 Potential Impact on Archaeology - Archaeological Landscapes

111 The submission states that "*the archaeological information provided concentrates on sites, as distinct from archaeological landscapes. Additional information should be provided on significant historic landscapes, and the landscape setting of monuments, their Ordnance Datum, and the Ordnance Datum of the proposed towers.*"

Applicant's Response:

112 The desk based evaluation gave rise to a greater understanding of the archaeological, architectural and cultural heritage environment through which the proposed development

passes, along with detailed mapping in GIS highlighting known features, sites, areas and landscapes in the vicinity which may experience impacts as a result of the proposed development. From project inception, during the course of the constraints study and route selection process, the assessment methodology took account of the known archaeological and architectural resource, history, folklore, placenames and physical landscape of the study area. Chapter 14, Volume 3C of the EIS appraises potential impact in the context of the broad cultural heritage contained within the landscape, which includes the prehistoric and historic patterns of human impact. Avoidance of concentrations of sites, major monuments and landscapes was the guiding principle of the assessment. Section 14.4 of the EIS (existing environment) provides a general description of the landscape and the associated cultural heritage landscapes in the region. Section 14.4.2 provides additional information on specific archaeological and historic periods, related sites and landscapes. Additional research sources were used to further inform the assessment including toponym analysis, examination of detailed aerial photographs and cartographic sources along with all other available sources. Any proposed or designated landscape areas contained within the Monaghan and Cavan County Development Plans were included in the appraisal.

- 113 Further mapping is provided within Appendix 19.1 with Ordnance Survey Discovery Series background mapping. This mapping has been enhanced using hillshade modelling and coloured height data to accentuate the landscape setting of the archaeological monuments and the proposed development. The Ordnance Datum of the towers is provided in Volume 3B, Chapter 6 of the EIS.

19.3.4.6 Potential Impact on Archaeology – Ref. MO027-077

- 114 The submission notes that monument MO027-077, a site at Corrinenty, has the potential to be impacted upon.

Applicant's Response:

- 115 It is acknowledged in the EIS that there is potential that works here may inadvertently impact on sub surface archaeological remains associated with the enclosure (Table 14.11). This enclosure is located 35m to the NE of the stringing area, there is therefore the potential that the site may be inadvertently impacted on by construction traffic. It should be noted that the nearest structure is located <20m to the western edge of the enclosure and not to the centre point. It is recommended in the appraisal that a suitably qualified archaeologist monitor all groundworks associated with removing the polesets to facilitate reducing the height of the existing 110kV line. Additionally, the enclosure will be clearly demarcated and its location highlighted to the construction contractor. More detail regarding the predicted impacts on setting is also provided in **Appendix 19.1** of this document.

19.3.4.7 Potential Impact on Archaeology – Ref. MO019-016.

- 116 The submission notes that the views from Lennan megalith (MO019-016) are scenic and suggests specific mitigation for this site and an additional site (MO014-022).

Applicant's Response:

- 117 It is acknowledged in Table 14.39 that the overall significance of the impact of the proposed development on the setting of Lennan megalith (SMR number MO019-016) is considered to be significant. The request that MO014-022 be demarcated is acknowledged and EirGrid confirms that this will be carried out as part of the mitigation for this site. More detail regarding the predicted impacts on setting is also provided in **Appendix 19.1** of this document.

19.3.4.8 Photographic Record of Sites

- 118 The submission suggests that a full photographic record of sites which will experience a permanent operational impact should be carried out prior to works commencing.

Applicant's Response:

- 119 More detail regarding the predicted impacts on setting of sites which will experience a permanent operational impact along with photographs, where available, is provided in **Appendix 19.1** of this document.

19.3.4.9 Relationships between Archaeological Sites

- 120 The submission states that *'the impacts on relationships between archaeological sites has not been addressed by the applicant'*.

Applicant's Response:

- 121 As noted above and as described in Appendix 14, Section 14.1.5.1 of the EIS, the evaluation of a sites 'Sensitivity to Impacts on Setting' was based upon the criteria (which includes spatial and historic relationships between sites) noted in **Section 19.3.4.4** above.

19.3.4.10 Potential Impact on Architecture – Shantonagh and Tully House

- 122 The submission states that *'the EIS notes that "there will be a slight negative permanent impact on these historic demesnes (Shantonagh and Tully House)", but it does not provide a breakdown of the rationale for this assessment', and that landscape maps should be provided.*

Applicant's Response:

- 123 The Demesne landscapes and historic gardens are generally shaded on the OSI 1st edition maps, however it was discovered during the appraisal that this is not the case for County Monaghan. Contact was made with the Architectural Section of the then DoEHLG (now the DAHG) and at the time (May 2011), they were unaware of this anomaly. In light of this, the Garden Survey on the Buildings of Ireland website (<http://www.buildingsofireland.ie/Surveys/Gardens/>) was used as a baseline for the point locations of historic gardens and then their boundaries were mapped in GIS using professional judgement and experience.

- 124 As described in section 14.1.3.5 of Appendix 14.1 of the EIS, analysis of early maps informed the evaluation process with the locations of early habitation sites and sites of architectural potential as well as how they have changed over time. Such sites range from

individual house sites, wells and lime kilns to larger industrial features including bridges, mills, canals and railways, and the large demesnes and country house with their historic gardens. The final phase of this evolution is evident when the early mapping is cross referenced with aerial photography.

- 125 Sites of potential architectural interest were noted in GIS and the mapping taken into the field to inform consultants on the ground. During fieldwork the consultants had detailed aerial photography and first edition Ordnance Survey mapping to assist them in evaluating the potential impact on both known and previously unrecorded sites of architectural interest.
- 126 The NIAH garden survey notes that there are virtually no recognisable features associated with Tully House. This is noted in Table 14.4 in Chapter 14, Volume 3C of the EIS. Between Towers 170 and 175 the proposed development passes through a region that is associated with Shantonagh House and Tully House historic landscapes. The NIAH garden survey notes that the main features associated with Shantonagh House are substantially present but the peripheral features are unrecognisable. Shantonagh House, however, is no longer extant. Both sites are listed in the Buildings of Ireland Garden Survey of the www.buildingsofireland.ie website. As noted in Section 14.4.4.3, the demesne landscapes and historic gardens have not been shaded on the first edition OSI maps but their extents were interpreted from the historic mapping. No demesne landscape or historic garden features, including boundary walls, gates, entrance features etc. were noted that will be directly impacted on by the proposed development. There will be a slight negative, permanent impact on these historic landscapes.
- 127 Landscape maps showing the demesnes and related features are presented in **Appendix 19.1** of this document.

19.3.5 Meath County Council (SI-2015-0216)

19.3.5.1 Potential Impact on Cultural Heritage – Brittas, Teltown and Bective Abbey

- 128 The Conservation Officer of Meath County Council has specific concerns in relation to Brittas, Teltown and Bective Abbey as described below.
- 129 In relation to Brittas the Conservation Officer suggests that moving the line to the western side of the road might not have as great an impact on the setting of Brittas House, its demesne landscape, and the cluster of monuments within the archaeological area of Brittas - which is on the register of Historic Monuments. She recommends that the applicants be requested to demonstrate the results of such an amendment. Should it be considered that the impact on Cruicetown is unacceptable, other solutions should be considered for the line through Brittas – in order to avoid the severity of the impact to reduce the extent of historic tree which would have to be removed.
- 130 With regard to Teltown the Conservation Officer considers it would be preferable from a visual impact perspective to underground the line, however, she recognises that this may increase the potential impact on any surviving sub-surface archaeology which has not been identified in the archaeological assessment. The CO also notes that she infers that the EIS considers that this area is a degraded landscape and that the visual impact of the line should be accepted.

131 With regard to Bective the Conservation Officer considers that Photomontages 64 and 65 demonstrate that the line will be distinctly visible on the horizon when looking west from Bective. The Conservation Officer recommends that serious consideration should be given to the undergrounding option for this area. In the event that cost is deemed to be the overriding consideration, then mitigation measure to provide visual screening should be provided.

132 The Conservation Officer also notes that:

“An archaeologist may not be the ideal person to monitor potential impacts on architectural heritage and demesne landscapes, and these areas should be monitored by a suitably qualified person with expertise in these respective fields.”

133 The conservation officer lists a number of named protected structures which, in her opinion, will experience a visual impact of either moderate or significant.

134 The conservation officer and the heritage officer state in their reports that the location of the North-South 400 kV Interconnector must be considered within the context of the World Heritage Convention and cumulative impact in combination with Emlagh Windfarm and Maighne Windfarm currently under consideration by the Board. She notes that these developments and other large scale developments should be taken into account when assessing the impact on the Tara Complex. The heritage officer suggests that the Board should seek the advice of an independent World Heritage Expert to assess the potential impact (and in combination impact) of the proposed development on any future nomination to UNESCO for World Heritage Status.

Applicant's Response:

135 The setting of Brittas House and demesne has been revisited a number of times throughout the project as it is one of the areas of most significant cultural heritage impact along the proposed route. It is noted that in the Final Re-evaluation Report (2013) an alternative route was posited to the west, which avoided Brittas, but would have had a significant impact on the setting of Cruicetown Church and Cross, a National Monument in the Ownership of the state. There are significant constraints in the region, including Nobber to the east with a number of archaeological monuments and protected structures, and Cruicetown Church and Cross, Robertstown Castle and Robertstown Ringfort to the west, all of which are National Monuments in the Ownership of the State. The current route takes advantage of topography to screen the proposed development from Cruicetown and Nobber. Although the route passes through Brittas demesne, along its current alignment, it is well screened from the surrounds of Brittas House by intervening woodland (see also **Appendix 19.1** of this document).

136 Moving the proposed line to the west of the adjacent road (L6802) will significantly increase the altitude of the proposed development and increase its potential to impact on the setting of a number of sites in the area, including Cruicetown Church and Cross, a number of sites in the environs of Nobber, Brittas House, and Whitewood Demesne. An internal review of sites to the west of the road was undertaken in November 2011, however due to the increased potential to impact on sites in the wider area, as well as Brittas House the original route was maintained as the preferred route.

137 For an overhead line solution, it is the opinion of the Cultural Heritage consultant that the proposed route is, on balance, the best option when taking into account all the cultural

heritage constraints of the surrounding area. Further information regarding Brittas is also provided in **Appendix 19.1** of this document.

- 138 The Teltown region has changed significantly since O'Donovan documented its historical associations whilst working for the Ordnance Survey 1830. As has been noted in the Teltown Impact Assessment Report (Volume 3D Appendix 14.5), at this time the core of the Teltown landscape, as identified by O'Donovan, was located in the vicinity of Rath Dhú, an impressive enclosure in the middle of a large field with no development in its vicinity. This is no longer the case, a roadway into the field now exists with a number of houses and agricultural buildings and the field itself has been divided into a dozen smaller fields. In the surrounding area several one off houses have been constructed. At the time of the first edition Ordnance Survey (circa 1830) there were approximately 18 houses located within the Teltown ZAA, by the time of the second edition survey (circa 1900) this had increased to approximately 25. There are currently approximately 94 houses located within the Teltown ZAA. Further information regarding Teltown is also provided in **Appendix 19.1** and **Section 19.2.2.1** of this document.
- 139 An assessment of the potential for undergrounding the section of the proposed development which passes through the Teltown ZAA is presented in Volume 4, Appendix D, Volume 3 Appendices, Partial Undergrounding Report 2015. While it was concluded that it was not possible to ascertain for certain the potential for impacting directly on previously unknown archaeological remains, it was nonetheless considered that there is a greater risk of impacting on these remains during construction of an UGC than the proposed OHL. Any direct impact would also be permanent and irreversible. Although the OHL option would have a greater impact on the setting of cultural heritage sites, it would be preferable to an UGC option at this location as it is likely to generate fewer direct, physical, irreversible impacts on the non-renewable cultural heritage resource
- 140 Further information regarding Bective Abbey is also provided in **Appendix 19.1** and **Section 16** of this document of this document.
- 141 In line with the Code of Practice between the National Monuments Service of the DoEHLG (now the DAHG) and ESB Networks, 2009, a project archaeologist will be appointed to oversee the effective implementation of the recommended mitigation strategies. Where works are required close to traditional walls, bridges and farm buildings a conservation architect or conservation engineer will fulfil this role.
- 142 As noted in the Landscape section of this document (**Section 16.3.7.2**) *'a description of the proposed Emlagh Wind Farm and Maighne Wind Farm projects is described in Volume 3B, Chapter 10 – Cumulative Impacts and Impact Interactions, Sections 10.3.2.1 and 10.3.2.2. The potential cumulative landscape and visual effects arising from the interaction with the proposed Emlagh Wind Farm is described in Section 10.4.7. Photomontages 48A, 48B, 48C, 49, 50, 50A and 54 included in Volume 3C, Figures illustrate the cumulative visual effects between the proposed transmission line and the proposed Emlagh Wind Farm.*
- 143 *There are no cumulative impacts expected to arise between Maighne Wind Farm and the proposed transmission line due to the distance of approximately 15.6km between the two developments. However, the planning application for planning approval in respect of Maighne Wind Farm was lodged in May 2015 after the EIS landscape and visual impact appraisal for the proposed North-South Interconnection Development was completed. Given the availability of turbine locations following the planning submission, it is likely that the proposed transmission line and Maighne Wind Farm will be visible in combination from*

the Hill of Tara. The proposed Maighne wind turbines would become visible on the horizon. The proposed North-South Interconnector development would therefore be located between the viewpoint and Maighne Wind Farm at 6.29km distance as shown in Photomontage 68, which illustrates the North-South development only and is included in Volume 3D, Figures. However, the long distance between Maighne Wind Farm and the North-South Interconnector means that the cumulative landscape and visual impact will not be significant.' Further information on the impact on the setting of Tara is included in Appendix 19.1 of this document.

- 144 It is notable that the Maighne Wind Farm will be visible on the horizon during times of clear atmospheric conditions, at these times proposed wind farm will be visible above the horizon where it will have an impact on the setting of the Hill of Tara. At such times the impact of the wind farm will be greater than that of the OHL development given that it is visible above the horizon. Given the distance between the two developments and the slight impact that the proposed OHL will have on the setting of Tara the cumulative impact is not significant.

19.3.5.2 Potential Impact on Protected Structures

- 145 The Conservation Officer prepared a detailed report in which she lists protected structures or structures of architectural heritage value where, in her opinion, the setting of the structure will be negatively affected by the proposed development. Furthermore she has highlighted structures where, in her opinion, the visual impact on the setting will be either moderate or significant. The highlighted sites include

- MH031-107, National Monument, SMR ME031-019, Bective Abbey
- MH031-108, SMR ME031-019, Bective Bridge
- MH030-107, NIAH Garden survey number ME-42-N-823629, Philpotstown (Dunderry Park),
- MH017-129, NIAH Garden survey number ME-42-N-804728, Teltown House and demesne,
- MH012-100, NIAH Garden survey number ME-42-N-829790, Mountainstown House and demesne,
- MH011-124, NIAH Garden survey number ME-42-N-823783, Dowdstown,
- MH005-105, Register of Historic Monuments number 1997, NIAH Garden survey number ME-35-N-806867, Brittas,
- MH005-104, NIAH Garden survey number ME-35-N-801886, Whitewood

Applicant's Response:

- 146 Although the authors agree with the Conservation Officers assessment regarding the impact on setting of some of the aforementioned sites, there are differences, which are addressed below.

- 147 **Bective Abbey** - It was determined that the impact on setting of the proposed development on this site would be moderate. It should be noted that the view presented in Volume 3D Photomontage 64 and Volume 3D Photomontage 65 depict the greatest potential **impact** from the proposed development, having been taken from a small

platform at the top of the stairs on the south facing façade. All other views towards the proposed development will be from an elevation approximately 2m lower. Further information regarding Bective Abbey is also provided, in **Appendix 19.1** and **Section 16** of this document (including photographs from both the top and bottom of the stairs).

- 148 **Bective Bridge** - Bective Bridge crosses the Boyne River just to the south of Bective Abbey and, as noted by the Conservation Officer, it is a protected viewpoint. As outlined in the EIS, from a cultural heritage perspective the principal view from the bridge is towards Bective Abbey. The bridge itself is best appreciated from the grounds of Bective abbey when looking to the south west, but can also be viewed when exiting the entrance to Bective Mill, which runs just to the north of the Boyne River. The proposed development is not visible in any of these views. From the bridge itself there is a view to the west towards the proposed development and this view is presented in Volume 3D Photomontage 66. It is the opinion of author that the significance of the impact of the proposed development on the setting of Bective Bridge is slight from a cultural heritage perspective.
- 149 **Philpotstown (Dunderry Park)** – The significance of the impact of the proposed development on setting of Philpotstown demesne (Dunderry Park) was evaluated to be moderate, while the impact on the setting of the house was found to be slight to imperceptible. Further information regarding Philpotstown demesne (Dunderry Park) is provided in **Appendix 19.1** of this document.
- 150 **Teltown House and demesne** – The significance of the impact of the proposed development on setting of Teltown Demesne and Teltown House was evaluated to be slight to moderate. Further information regarding Teltown House and Demesne is provided in **Appendix 19.1**.
- 151 **Mountainstown House and demesne** - The significance of the impact of the proposed development on setting of Mountainstown Demesne was evaluated to be moderate while the impact on the setting of Mountainstown House was found to be slight. Further information regarding Mountainstown House and Demesne is provided in **Appendix 19.1** of this document.
- 152 **Dowdstown** - The significance of the impact of the proposed development on setting of Dowdstown was evaluated to be slight. Further information regarding Dowdstown House and Demesne is provided in **Appendix 19.1** of this document.
- 153 **Brittas** - Further information regarding Brittas House and Demesne is **Appendix 19.1** and **Section 16** of this document
- 154 **Whitewood** - The significance of the impact of the proposed development on setting of Whitewood Demesne and House was evaluated to be moderate. Further information regarding Whitewood House and Demesne is provided in **Appendix 19.1** and **Section 19.4.1** of this document.

19.4 RESPONSE TO SPECIFIC ISSUES RAISED IN OBSERVER SUBMISSIONS

19.4.1 Elected Members of Meath County Council (SI-2015-002)

- 155 The following points in relation to cultural heritage were raised in a submission from the elected members of Meath County Council:

- That the proposed development will have a negative impact on the heritage and aesthetic beauty of County Meath.
- Councillors felt that there will be a net loss to County Meath in terms of tourism and heritage if the development proceeds.
- The Councillors questioned if the development would have a detrimental impact on Special Areas of Conservations and heritage sites such as Bective Abbey.
- Councillors cited the recent refusal of planning permission to the Cregg Windfarm in Nobber and suggested that the reasons for refusal are still valid in the context of the EirGrid Proposal.
- The Councillors state that the above facts are in direct conflict with many of the policy objectives and aspirations of the current Meath County Development Plan. Relevant policies and objectives are highlighted in Appendix 1 of the Development Plan, related to Energy and Communications; Cultural & Natural Heritage; Landscape Character; Rural Development and Tourism Development.

156 The use of Underground Cable technology solves all of the issues created by the use of overhead lines and pylons. The cables can be placed alongside existing road infrastructure, without the need to pass through areas of historic importance such as Teltown, and obviously without any negative visual impact.

Applicant's Response:

157 Any cumulative impacts from existing 110kV and 220kV infrastructure on the setting of the cultural heritage resource has been addressed in the EIS.

158 It has been acknowledged in the EIS that there will be a negative impact on the setting of a number of cultural heritage sites within the vicinity of the proposed development.

159 Following mitigation there will be no direct physical impact on the upstanding remains of any designated cultural heritage sites. It is acknowledged in the EIS that there will be a negative impact on the setting of a number of cultural heritage sites in the vicinity of the proposed development.

160 A response to submissions regarding Bective Abbey is presented in **Section 16** of this document.

161 The Cregg windfarm proposal referenced was refused permission by the planning authority largely on visual grounds and for reasons of impact upon a protected structure (Whitewood House).

162 Whitewood House faces to the east towards the proposed site of Cregg Windfarm which was to consist of 6 turbines. The windfarm would have been directly in line with the entrance avenue of Whitewood house and all 6 turbines would have been located within an area of approximately 1.5km north to south. There is no doubt that the proposed windfarm would have had a significant negative impact on views from the house when looking from the elevated stairs at the front of the house along the entrance avenue.

163 Submissions were made by the Irish Georgian Society and the Department of Arts, Heritage and the Gaeltacht in opposition to the proposed windfarm development due to the impact that it would have on the setting of the house and in particular the entrance avenue. The DAHG in their submission in relation to Cregg Wind Farm noted the 'fairly limited

assessment of the potential visual impact' and An Bord Pleanála noted the lack of consideration of alternatives.

164 In relation to the proposed Interconnection Development, it is to be located to the rear (west) of the house. There is a significant amount of vegetation located in the vicinity of the house and only a narrow corridor of visibility towards the proposed development. Even within this corridor there is vegetation that would likely interfere with views from ground level and the first floor. There will be a limited view of the transmission line structures at a remove of approximately 1.6km from the rear of (west of) the house, beyond Whitewood lake on the slopes of a hill. In the submission from North East Pylon Pressure (SI-2015-0332) a photomontage is provided that give a view of the proposed development from a second floor window in the house. There is a key viewpoint from the lake to the rear of Whitewood house but this will not be impacted by the proposed transmission line which is located west of this viewpoint.

165 It is noted that the impact on Whitewood of 150m high turbines located at 2.5km distance would be much greater than that of the proposed power line at 1.6km from for the following reasons:

- Turbines have a much greater mass / bulk as they are solid structures and are far more visible in the landscape than the lattice structures as is proposed for the OHL;
- Given the height of the turbines they will largely be visible above the horizon, where they will have a greater impact than the OHL towers which will mostly be visible below the horizon;
- The turbines were to be located directly in line with the most important view from Whitewood house, along the entrance avenue; and,
- The turbines would have also been visible from the designated viewpoint on the western side of Whitewood Lough, adjacent to Whitewood House in the view.

166 The specific policies referred to by the members are as follows:

- CH POL19: To encourage the protection, promotion and enhancement of heritage gardens and parks in the county and support public awareness, enjoyment and access to these sites.
- CH OBJ 22: To discourage development that would lead to a loss of, or cause damage to, the character, the principal components of, or the setting of historic parks, gardens and demesnes of heritage significance.
- CH OBJ 23: To require that proposals for development in designated landscapes and demesnes include an appraisal of the landscape, designed views and vistas and as assessment of significant trees or groups of trees as appropriate.

167 All the above policies relate to development in heritage gardens and parks, designated landscapes and demesnes of heritage significance. These areas were avoided as far as practicably possible taking into account competing constraints. They were included in constraints mapping and route selection for the proposed development. Any impacts to demesnes and historic gardens, be they direct physical impacts or impacts on setting are noted in the EIS. Of particular note is the demesne of Brittas. The impact here was the result of a number of competing constraints of greater impact significance including the general topography, the presence of Cruicetown National Monument to the south-west and Moynagh lough and Nobber to the east.

168 A response to the use of Underground Cable technology is set out in **Section 19.2.2.1** of this document and in Volume 4, Appendix 10.2 (Partial Undergrounding Report 2015) of the EIS.

19.4.2 Kathleen Hughes (SI-2015-0056)

169 This submission relates to views to and from an unnamed local fort in the vicinity of tower 109.

Applicant's Response:

170 It is assumed that this submission is in reference to SMR number MO014-028, a ringfort located in Lisdrumgormly townland which is listed in Volume 3C, Appendix 14.2, CMSA Archaeological Heritage. The ringfort is situated on the summit of a high North North West-South South East ridge. The banks are fairly uniform all the way around and the ringfort is 32m by 34.3m in diameter. To the southwest of the field there is a well. The defenses and part of the interior are overgrown with blackthorn, briars and ferns. The proposed development is located approximately 340m to the south east and 660m southwest of tower 109. The impact on this site will be slight to moderate.

19.4.3 Dunderry Fair Committee (SI-2015-0103) and Seamus Bowman (SI-2015-0131)

171 The submission relates to impacts on Dunderry Fair

Applicant's Response:

172 The site of the fair will not be directly impacted upon. There are no recorded archaeological sites at this location. The parking for the fair is in a field which is located in the south west corner of Philpotstown demesne (Dunderry Park). There are no demesne features noted in this area.

19.4.4 Robert Kenny (SI-2015-0114)

173 The submission relates to impacts on notable cultural heritage sites in the area around Dowdstown, including Dowdstown House, nearby souterrains, rock art in Fletcherstown and other monuments and protected structures in the general area. The submission suggests that the proposed development is contrary to the National Monuments Acts and that it will affect the settings of National Monuments and protected structures. It also states that the proposed development will not only affect the setting of archaeological monuments and protected structures listed below but will also dominate them.

174 The following sites are noted in the submission:

- Dowdstown House (RPS No.MH011-124).
- In combination impact with the proposed Emlagh Windfarm.
- Souterrains, particularly SMR number ME017-006.
- Prehistoric Rock Art in Fletcherstown (ME017-042).
- Arch Hall, Wilkinstown (RPS No. MH018-105).
- Clongill Castle (SM No. ME0-17-142).

- A nearby 19th century Glebe House.
- An Early Christian Cross (SMR No. SMR number MEH018-001).
- Fletcherstown Chapel (SMR No. ME018-101) and Fletcherstown School.
- Kilshine Church (RPS No. MH012-102).
- Mountainstown House (RPS No. MH012-100).
- Former Police barracks and adjoining courthouse at Georges Cross.
- A 1798 monument at the site of Knightstown Bog.

Applicant's Response:

- 175 Volume 3D Chapter 14 Cultural Heritage, Section 14.4.6.4 provides an overview of the cultural heritage resource in this area.
- 176 Dowdstown House (RPS No. - MH011-124) is approximately 570m east of Tower 291 and approximately 520m from tower 290. It is described in the NIAH Garden Survey as having its main features unrecognisable - peripheral features visible. The aspect of the house is towards the east. The rear of the house faces towards agricultural buildings, both 19th century and modern. It is the authors opinion that there will not be a significant impact on the setting of Dowdstown House. The impact was evaluated as slight. Further information regarding Dowdstown House is provided in **Appendix 19.1** of this document.
- 177 Souterrain SMR No. MH017-006 is located approximately 560m to the east of tower 291. The souterrain is now closed up but a shallow depression marks the site. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 178 Within Fletcherstown townland, located approximately 280m to the west of Tower 292, is a piece of rock art (SMR No. - ME017-042) described as displaying four concentric penannular rings on a boulder (Clinton (1983)⁶¹). According to Clinton the rock is ex situ and appears to have been moved to its present location during the course of field clearance work in the 1970's. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 179 Arch Hall, Wilkinstown (RPS number MH018-105) is located in excess of 2km to the east of the proposed development. The house is no longer extant and only ruins survive. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 180 Clongill Castle (SMR number ME0-17-142) is located approximately 780m to the east of the proposed development. The site is described in the Sites and Monuments Record as a rectangular tower house. The remains consists of two upper floors but parapet has been destroyed. The site is overgrown with good screening between it and the proposed development. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 181 A nearby 19th century Glebe House. This location is well screened and has no views towards the proposed development. It is located approximately 790m to the east of the proposed development. There will be no direct physical impact and the impact on the setting of this site will not be significant.

⁶¹ An Example of Rock Art from County Meath, Clinton, M., 1983. JRSAL.

- 182 An Early Christian Cross (SMR No. number ME018-001). This cross-base was situated on a mound at the SE side of a NE-SW public road in a gently undulating landscape. Cogan (1862-70, 2, 284) notes that it 'had been broken in twain.' The base is undecorated, roughly rectangular and pyramidal-shaped. It is located approximately 1.5km to the east of the proposed development. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 183 Fletcherstown Chapel (RPS No. MH018-101) is located approximately 1.5km to the east of the proposed development. The church is a small T-plan Church dating from the early 19th Century. There will be no direct physical impact on either the church or the school and the impact on the setting of these sites will not be significant.
- 184 Kilshine Church (SMR No. ME012-038 and RPS No. MH012-102) is located approximately 1.5km to the east of the proposed development. The present Church of Ireland church of St. Sinche, known locally as Cill Insha, was built in 1815 with a spire but it is now a shell within a rectangular graveyard defined by masonry walls. It is located. The original Church is no longer extant. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 185 For a description of the impact on Mountainstown House (RPS MH012-100) refer to **Appendix 19.1**.
- 186 The former Police barracks and adjoining courthouse at Georges Cross are not listed in any cultural heritage inventory and are located roughly 1.7km to the east of the proposed development. The site has good screening to the west. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 187 The 1798 monument at the site of Knightstown Bog is located in excess of 1.6km to the east of the proposed development. There is good intervening screening in the centre of the view to the west in the form of a copse of woodland. There will be no direct physical impact and the impact on the setting of this site will not be significant.

19.4.5 Gerald and Glynis McAdam (SI-2015-0193)

- 188 The submission states that the proposed development will bisect the view between two ringforts, one at Ardragh and the other at Raferagh, County Monaghan. In addition the submission notes the presence of 'earthworks' in the vicinity of a tower in Corvally. The submission also highlights a childrens burial ground and the site of the finding of a dugout canoe from the late 1800's.

Applicant's Response:

- 189 As illustrated below there are numerous ringforts and enclosures in the general area, some surviving and some no longer extant, it is acknowledged that there may be some bisection of views between some enclosures and ringforts. (Figure 19 4).

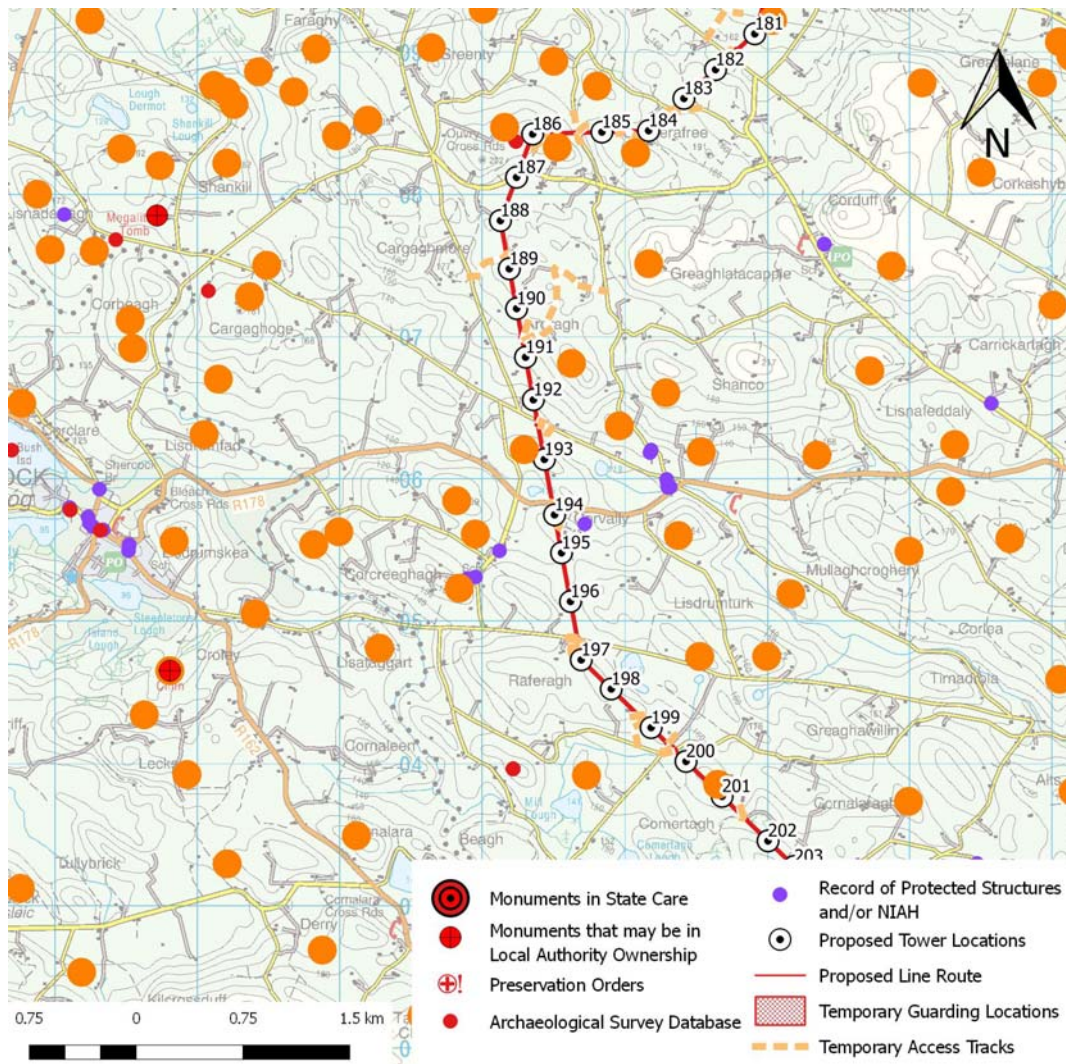


Figure 19.4 Map indicating locations of ringforts and enclosures, indicated in orange, in the vicinity of Rafferagh and Ardragh.

19.4.6 Jim and Mary Connolly and Family (SI-2015-0226)

190 The submission states that the proposed development will impact on the setting of the ‘Giants Graveyard’ or Court Tomb (SMR MO019-037) at Cornamucklagh South.

Applicant’s Response:

191 The Court tomb at Cornamucklagh South is located approximately 40m from the proposed development in a stand of trees in the corner of a field. The site appears on historic mapping as ‘The Cashell’ and is classified as a Court-tomb with roughly trapezoidal cairn incorporating at the north western border end a deep ‘U’-shaped court. The gallery is represented by single side stone. The site is not visible from the nearby local access road. It is the authors opinion that the proposed development will have a moderate permanent impact on the setting of this monument during its operational life. This impact is mitigated to a degree by the immediate screening. Further information regarding the Court Tomb is provided in **Appendix 19.1** of this document.

19.4.7 Submission from Sinn Fein (SI-2015-0275)

- 192 The impacts of the proposed development on all the sites listed are addressed in the EIS. Responses to general impacts on Teltown (**Section 19.2.2.1** of this document), Brittas Demesne (**Section 50**), Whitewood Demesne (**Section 19.4.1**) and Bective Abbey (**Section 0**) are described in the relevant sections of this document and in **Appendix 19.1**.
- 193 Ardraccon Estate – As outlined in the EIS the proposed development will have a slight to imperceptible impact on setting of Ardraccon. The estate is bordered to the west by an extensive stone wall and dense stands of trees that effectively screen the grounds of Ardraccon from the proposed development. Further information regarding Ardraccon is provided in **Appendix 19.1** of this document.
- 194 Tully House – As outlined in the EIS the proposed development will not impact on the setting of Tully House given that the house is no longer extant. Further information regarding Tully Demesne is provided in **Appendix 19.1** of this document.
- 195 Shantonagh House – As outlined in the EIS the proposed development will not impact on the setting of Shantonagh's original historic house, as this house was demolished some time after the Ordnance Survey surveyed its second edition mapping, circa. 1900. Further information regarding Shantonagh Demesne is provided in **Appendix 19.1** of this document.
- 196 The submission states that it supports the following quotation "The EIS notes that "there will be a slight negative permanent impact on these historic demesnes" but does not provide a breakdown of the rationale for this assessment. ABP specifically noted that the EIS should "Identify historic demesne landscapes along the route and assess potential impacts thereon".' It is important that this be put into context. The quoted text is taken from the submission from Monaghan County Council and relates specifically to Shantonagh House and Tully House and their associated demesnes. As has been noted above, Tully House is no longer extant and although a house exists on the site of Shantonagh House it is not the historic house that existed at the time when Ordnance Survey surveyed its second edition mapping, circa. 1900. Further information regarding Tully Demesne is provided in **Appendix 19.1** of this document.
- 197 The assertion that the applicant has failed to adequately identify historic demesne landscapes along the route and assess their impacts thereon is incorrect. All demesnes landscaped located within 2km of the proposed route have been identified and their extents mapped (Volume 3C Figures 14.1 to 14.13 and Volume 3D Figures 14.1 to 14.17). All construction phase and operational phase impacts are discussed in Volume 3D Section 14.5 and Volume 3D Section 14.5. Further information regarding demesnes is provided in **Appendix 19.1** of this document.
- 198 The submission quotes from the Monaghan County Council submission regarding a lack of imagery suitable for assessing the impacts on setting. This is addressed in the response to Monaghan County Council (**Section 19.3.4.8**) and **Appendix 19.1**.
- 199 In relation to the Gaeltacht region the submission states that the region is vulnerable to depopulation, yet provides no evidence that this is the case. Furthermore it intimates that

this depopulation is already having a damaging effect by stating that the 'project as proposed will have a further damaging effect on the Irish language community' yet there is no indication that the Irish language in the Gaeltacht is under threat. It is submitted that the proposed development will not impact the existent extent of use of the Irish language in the Gaeltacht region.

19.4.8 Andrew Clarke and Family (SI-2015-0277)

200 The submission states that the proposed development will impact on the setting of Muff Castle and bawn (SMR No.'s CV035-016001 & 016002); and the cairns (SMR No.'s CV034-041, 058 & 057) and healing lake at Lough an Leagh.

Applicant's Response:

201 The annual horse fair at Muff originated in the later medieval period (1608) at a site known as 'Fair Green'. This site was an SMR but the record has been made redundant, that is it has officially been de-classified as an SMR by the relevant authorities. The fair currently takes place just northwest of the fair green on a site adjacent to the site of the no longer extant castle (SMR number CV035-0160001-). Neither the Castle nor the site of the fair will be directly impacted upon.

202 There are three cairns (SMR CV034-057, 041 & 058) ranging in height from 0.9 to 1.8m situated along the ridge on Lough an Leagh mountain to the west of the proposed development. The cairns are 2.1, 2.2 and 2.5km west of the line route respectively. The northernmost cairn (SMR CV034-057) is currently obscured by forestry, the central cairn (SMR CV034-041) is well preserved and occupies the highest point of the ridge, the southernmost cairn (SMR CV034-058) is located immediately south of a fenced area containing a telecommunications masts and associated structures. There will be views from the cairns eastwards towards the proposed development however these impacts on setting will not be significant.

203 The healing lake at Lough an Leagh is now completely surrounded by forestry, the lake does not appear on any standard cultural heritage inventory.

19.4.9 Submission from Gabriel Ward (SI-2015-0296) and Denis Ward (SI-2015-029)

204 The submission states that the proposed development will impact on the setting of a 'filled pond only metres away from Pylon 172'. The area was formerly owned by the Fitzherbert family.

Applicant's Response:

205 Tower 172 is located within the demesne lands of Tully House described in NIAH as having 'virtually no recognisable features'. The pond does not feature on any Cultural Heritage inventory. Based on LIDAR and aerial imagery the pond is still extant, and the tower will be located 15m to the North West of this feature. There will be no direct physical impact on the pond.

19.4.10 Submission from North East Pylon Pressure (SI-2015-0332)

19.4.10.1 Potential Impacts on Cultural Heritage

206 In its submission (3.1.3) NEPP note the existence of recorded monuments, and that the proposed development will occur *'in areas that are likely to be prone to sub-surface archaeology'*. They also state that the proposed development will lead to loss or cause damage to the character, the principle components of, and the settings of parks, gardens and demesnes of special historic interest (3.1.7). The submission states that the development would result in direct adverse effects to protected archaeological sites, monuments and their setting (3.1.8).

Applicant's Response:

207 A detailed response to potential subsurface archaeology, loss, damage or adverse effects to cultural heritage sites is presented herein in **Section 19.2.1**.

19.4.10.2 Adequacy of Assessment

208 Section 5.15 of the NEPP submission suggests that the assessment of the cultural heritage is inadequate due to inadequate access to lands. It has been submitted that *"reliance on aerial photography and cartographic research to confirm site specific cultural heritage issues in lieu of actual line route inspection is a highly dubious practice."*

Applicant's Response:

209 It is important to note that following mitigation the proposed development will not physically impact on the upstanding remains of any designated/known architectural or archaeological sites.

210 Any potential impacts will be associated with undesignated or previously unrecorded cultural heritage sites or associated remains. The main mitigating factors were avoidance of known cultural heritage sites and the small physical footprint of the proposed development in comparison to other types of linear infrastructure such as roads, railway lines, gas pipelines etc.

211 While it is preferable that access to the entirety of a development site occurs for the purposes of assisting in the environmental appraisal, this has not been possible in the case of much of the alignment of the proposed development. Cultural heritage evaluations are carried out in order to establish whether there are either cultural heritage features with discrete above ground expressions or subsurface sites which have not previously been recorded but may be visible on the ground, as well as to examine anomalies which may have been identified through review of aerial photographs etc. Notwithstanding the limited site access, it was possible to carry out a robust assessment of the likely impacts on the cultural heritage resource having regard to:

- The length of time over which the studies took place and the extent and coverage of these studies. This evaluation involved collating a wide range of information from a variety of sources including the List of National Monuments, the Record of Monuments and Places, the National Inventory of Architectural Heritage, the Records of Protected Structures, Documentary and Historic Sources, Relevant Local and National Legislative and Planning Policies, Historic Maps and map regression, Aerial Photography, and

LiDAR orthography. This allowed known heritage sites and places to be flagged and avoided and facilitated the discovery and avoidance of previously unknown possible cultural heritage sites.

- The quality of the aerial photography & LiDAR survey. As demonstrated in Section 1.5 of Volume 3B of the EIS, the aerial photography and LiDAR orthophotography used is of an extremely high quality and definition, providing clear images of the landscape below, thereby facilitating identification of features on the ground. In Teltown a highly detailed LiDAR survey was completed in order to produce a digital terrain model to facilitate a more detailed survey of this location;
- The availability of views from the publicly accessible land, roads or adjacent land where access was granted. There is an extensive network of public roads throughout the study area which allowed for visual surveys of additional inaccessible landholdings to be conducted from these roads as well as from adjacent landholdings where access was granted; and
- Tower locations. For the most part, the landscape through which the proposed development passes consists of agricultural land and the towers are predominantly located within the fields and not on field boundaries.

212 It should also be noted that fieldwork does not guarantee avoidance of subsurface archaeological sites which may have no discernible above ground expression. Additionally, variation in potential site visibility related to weather conditions, topography, vegetation, hillwash, reclamation and soil character can limit the effectiveness of field inspection.

213 It is interesting to note that within the land to which access was made available no new sites of archaeological potential were discovered.

19.4.10.3 Potential Impact on a number of Named Sites

- Whitewood
- Brittas
- Rahood
- Mountainstown House
- Churchtown House
- Philpotstown
- Bective Abbey

214 With regards to Whitewood House the submission mentions a recent refusal decision regarding Cregg windfarm by and Bórd Pleanalá and that pylons 257, 258 and 259 would interfere with the same protected views. Appendix 13 of the NEPP submission addresses the demesne and house at Brittas, listed on the Register of Historic Monuments. The submission states that Brittas is 'a National Monument in private hands', and that the EIS does not demonstrate the same care and consideration as that given to National Monuments in State Care. Appendix 14 of the submission addresses impacts on Whitewood House and demesne. It states that the south and west views from the house would be severely impacted upon. The following points relevant to cultural heritage are highlighted in the letter accompanying the submission and are addressed in this response.

- Visual Impact: Protected Structure therefore protected view.
- Importance of House and unique landscape.

215 A photomontage accompanies the submission. Detailed assessments accompany the submission. These assessments describe the significance of the house and demesne features. It is noted that they describe depletion of the tree plantations to the west.

216 Appendices 16 and 17 of the submission address impacts on Teltown and Donaghpatrick.

Applicant's Response:

217 Responses to general impacts on Brittas Demesne (**Section 50**), Whitewood Demesne (**Section 19.4.1**) and Bective Abbey (**Section 0**) are described in the relevant sections of this document and in **Appendix 19.1**. A detailed response to impacts on the Teltown ZAA and the Donaghpatrick area is provided in **Section 19.2.2.1** of this document. Our considerations in respect of the Cregg Windfarm decision of An Bord Pleanála are also outlined above.

218 Mountainstown House and demesne - The significance of the impact of the proposed development on setting of Mountainstown Demesne was evaluated to be moderate while the impact on the setting of Mountainstown House was found to be slight. Further information regarding Mountainstown House and Demesne is provided in **Appendix 19.1** of this document.

219 Churchtown House and demesne - The significance of the impact of the proposed development on setting of Churchtown House and Demesne was evaluated to be moderate. Further information regarding Churchtown House and Demesne is provided in **Appendix 19.1** of this document.

220 Philpotstown (Dunderry Park) – The significance of the impact of the proposed development on setting of Philpotstown demesne (Dunderry Park) was evaluated to be moderate, while the impact on the setting of the house was found to be slight to imperceptible. Further information regarding Philpotstown demesne (Dunderry Park) is provided in **Appendix 19.1** of this document

19.4.11 NV Irish Farm LLC (SI-2015-0335)

221 The submission concerns the impact on the setting of the proposed development on the demesne lands of Bloomsbury and a number of protected structures therein, including a 18th and mid 19th century dwelling house, and a fishing temple and boat house on the Blackwater and Moynalty River.

Applicant's Response:

222 Bloomsbury House is featured in the garden survey of the NIAH and is described as having its 'Main features substantially present - some loss of integrity'. Within the demesne there are two Protected Structures, Bloomsbury House (RPS MH017-124) a detached five-bay two-storey over basement 18th century house and an octagonal brick boathouse (RPS MH017-122) with temple and dome. Both the House and the boathouse are located in excess of 2.5k to the east of the development with good intervening screening. There will

be no direct physical impact and the impact on the setting of this site will not be significant.

19.4.12 Ronan O'Loughlin and Miriam Reilly (SI-2015-0382)

223 The submission concerns the impact on the setting of the proposed development on the Brú na Bóinne UNESCO World Heritage Site and two candidate sites (Kells as part of the Early Medieval Monastic Sites & the Tara Complex) and multiple protected structures including Curraghtown House.

Applicant's Response:

224 The proposed development will have no impact on the Brú na Bóinne UNESCO World Heritage Site. As outlined in the EIS the proposed development will have a slight impact on the setting of Tara and will have no impact on the setting of the Early Medieval monastic site of Kells. Further information regarding the two candidate sites that appear on the Tentative List (Kells as part of the Early Medieval Monastic Sites & the Tara Complex) is provided in **Appendix 19.1** of this document.

225 Curraghtown house (RPS MH011-107) is described as a detached two-storey house built circa 1860. It has a three-bay garden front and two-bay entrance front with single storey single bay entrance porch. Also of note are gates, railings and outbuildings. The house is located 5.6km to the west of the proposed development. There will be no direct physical impact and the impact on the setting of this site will not be significant.

19.4.13 St Johns Old Cemetery Restoration Group (SI-2015-0418)

226 The submission relates to impacts on the setting of a number of notable cultural heritage sites in the Nobber area, Co. Meath by the proposed development.

227 The following sites are noted in the submission:

- Crannogs at Moynagh (SMR's ME005-088001-16).
- Church, graveyard and grave slabs at Nobber (SMR's ME005-071001-071016).
- Medieval settlement cluster and motte and baily (SMR ME005-071 & 070)
- St John the Baptist Church (RPS MH005-306)

Applicant's Response:

228 Volume 3D Chapter 14 Cultural Heritage, Section 14.4.6.4 provides an overview of the cultural heritage resource in this area.

229 The prehistoric complex at Moynagh (SMR's ME005-088001-16) is concentrated to the north of a small lough. The site was discovered in 1977 and was subsequently excavated for a short season each year by J. Bradley since 1980. Excavation revealed that while the monument has had a long history of occupation the main phase of the crannog dates to early Christian times. At that time it consisted of a mound of stones and clay approximately 40m across defined by wooden piles. A circular house 11.2m in diameter is associated with this phase. The sites at Moynagh are located 1.1km to the east of the proposed development and are well screened by mature trees and a forestry plantation to the north

and west. There will be no direct physical impact and the impact on the setting of this site will not be significant.

- 230 The Church at Nobber (SMR's ME005-071001-071016) lies within a sub-circular graveyard defined by scarps that are retained by a low masonry wall. When the present Church of Ireland church was built in 1771 (Lewis 1837, 1, 443) the graveyard may have been cut back at the north. The graveyard contains a decommissioned 18th century church with a stone head in the S wall, the ruins of a medieval church two high crosses (a cross-slab (ME005-071009-), the Cruise effigial tomb (ME005-071004-), a font (ME005-071005-), a cross-base (ME005-071002-), seven crosses (ME005-071003-, ME005-071010-, ME005-071011-, ME005-071012-, ME005-071013-, ME005-071014-, ME005-071015-), architectural fragments (ME005-071016-), two 17th century effigial tomb-covers (ME005-071018-; ME0056-071019-) and a medieval graveslab (ME005-071005-). King (2005, 24; 2007, 58-63) records a number of other items including two mill-stones, that would appear to date from the early medieval period. This site is located 1.75Km to the east of the proposed development, there is good screening around the immediate site with intervening forestry and a ridge line to the west. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 231 The motte and baily (SMR ME005-071 & 070) to the North West of the town in Nobber, Co. Meath is a prominent feature visible on the R162. The site is a flat-topped earthen mound with a diameter of 13m at the top, 40m at the base and ranges in height from 6.5m to 8.5m. The bailey consists of raised rectangular area to the South East of the motte and is separated from it by broad shallow fosse. From the top of the mound there are good views in all directions. The proposed development is located in excess of 1.7km to the west of the site, views towards this have screening from natural ridges near the Brittas Estate and mature treelines and forestry. There will be no direct physical impact and the impact on the setting of this site will not be significant.
- 232 St John the Baptist is a former Church of Ireland Church built circa 1750 consists of a detached gable-fronted church, with three-bay side elevations to the nave. The building has been acquired by a local committee and has recently been renovated. It is located in excess of 1.7km to the east of the proposed development. There is good screening around the immediate site with intervening forestry and a ridge line to the west. There will be no direct physical impact and the impact on the setting of this site will not be significant.

19.4.14 Maria and John James Finnegan (SI-2015-0439)

- 233 The submission relates to the impacts on the setting of Rataine cemetery (SMR ME030-011-011003) by the proposed development.

Applicant's Response:

- 234 The Church (in ruins) and graveyard at Rataine, Co. Meath (SMR ME030-011-011003) occupies a rise in a fairly level landscape near a 'T' junction east of Philpotstown demesne. The church is within a rectangular graveyard defined by masonry walls, which were not present in the late 17th century according to Dopping (1682-5). The graveyard is in excess of 700m to the east of the proposed development, it has good intermediate screening. There will be no direct physical impact and the impact on the setting of this site will not be significant.

19.4.15 The Residents of Bohermeen and the New Line (SI-2015-0474) and Philip Murtagh and Family (SI-2015-0474)

235 The submission relates to the impacts on the setting of a number of Cultural Heritage Sites in Co. Meath. Specifically it claims that Ardraccon House will experience a negative impact on setting; the archaeological site at Teltown will be ruined; that there will be significant effects on the views from two sections of the Boyne Valley driving route – west of Bective and south of Donaghpatrick as well as on a locally significant view from Bective Bridge.

Applicant's Response:

236 Volume 3D Chapter 14 Cultural Heritage, Section 14.4.6.4 provides an overview of the cultural heritage resource in this area.

237 Ardraccon house is addressed in this document in **Section 19.3.1.6** above. Further information regarding Teltown and Bective are provided in **Sections 19.2.2.1 and 0** respectively.

238 Bective Bridge - Bective Bridge crosses the Boyne River just to the south of Bective Abbey and is a protected viewpoint. As outlined in the EIS, from a cultural heritage perspective the principal view from the bridge is towards Bective Abbey. The bridge itself is best appreciated from the grounds of Bective Abbey when looking to the south west, but can also be viewed when exiting the entrance to Bective Mill, which runs just to the north of the Boyne River. The proposed development is not visible in any of these views. From the bridge there is a view to the west towards the proposed development and this view is presented in Volume 3D Photomontage 66. It is the opinion of author that the significance of the impact of the proposed development on the setting of Bective Bridge is slight.

20 CONCLUSION

- 1 By letter dated 28th September 2015 to EirGrid plc, in respect of the application for approval of the proposed North-South 400 kV Interconnection Development made under section 182A of the Planning and Development Act 2000, as amended (Ref. PL02 .VA0017), An Bord Pleanála ('the Board') stated

"Having regard to the volume of submissions/observations received by the Board, which have already been forwarded to you, it is considered appropriate to invite you to respond to the issues raised in the submissions/observations including those made by the three planning authorities and prescribed bodies."

- 2 This document and the appendices thereto, comprise the response of EirGrid and its consultants to the issues raised in submissions and observations received by the Board, including those issues raised by the planning authorities and the prescribed bodies.
- 3 EirGrid is cognisant and appreciative of the time spent and effort made by all parties in respect of making these submissions to the Board and has sought to ensure that every submission has been considered and that the issues raised in those submissions and observations have been addressed.
- 4 At the beginning of each section, general information is provided in respect of the submissions/observations in which particular issues were raised in the context of the topic i.e. the approximate number of observers who raised issues in relation to that particular topic and a list of submission reference numbers (ascribed by EirGrid). Where common themes or sub-categories of issues are identified, the approximate number of observers who raised the particular sub-category of issue is also identified, and a list of submission reference numbers is also provided. A list of all observers and their full EirGrid reference number is provided in Appendix
- 5 Notwithstanding the time constraints, EirGrid has endeavoured to consider issues raised in all submissions / observations.

