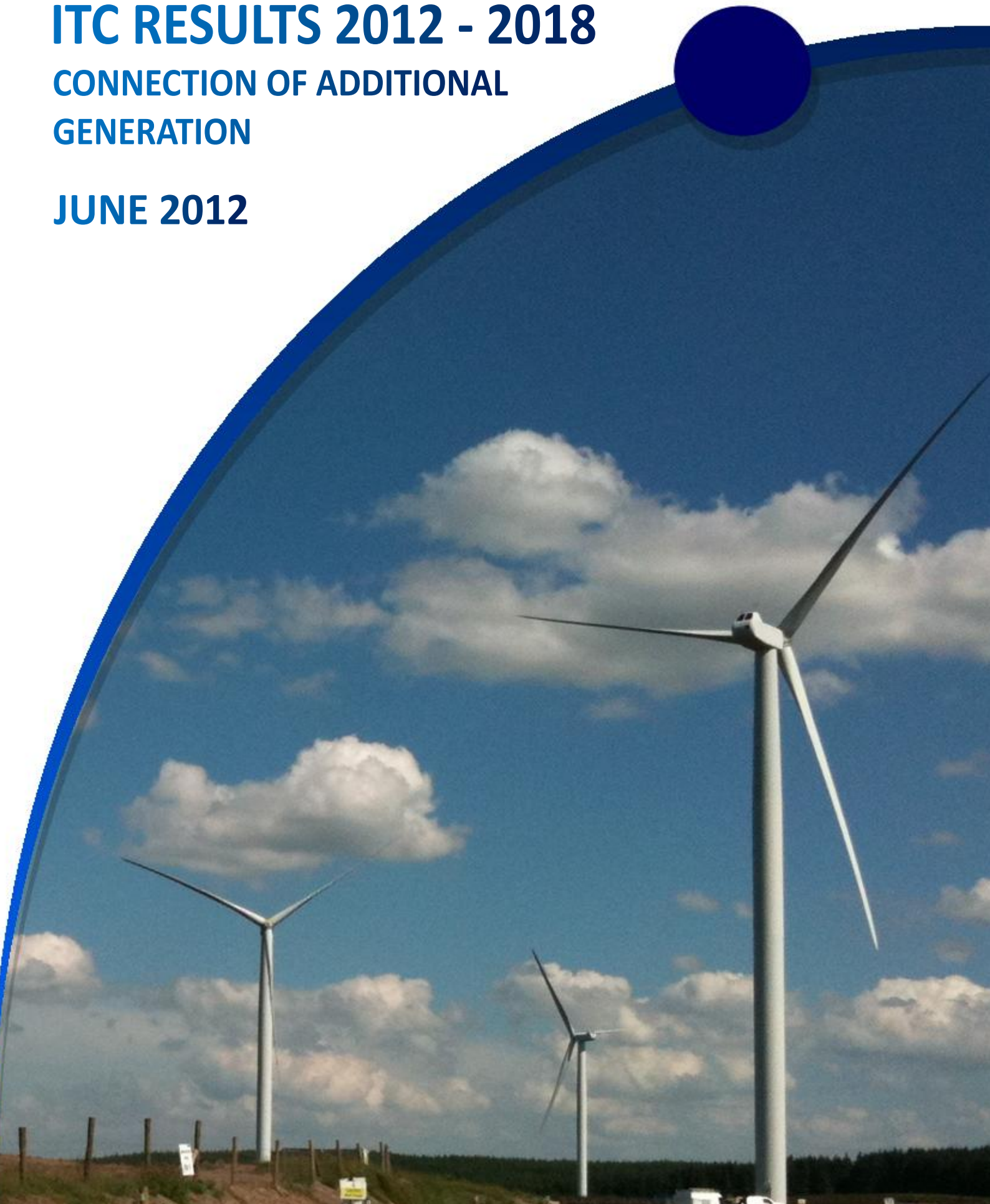
System Operator for Northern Ireland

ITC RESULTS 2012 - 2018

CONNECTION OF ADDITIONAL GENERATION

JUNE 2012



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EXECUTIVE SUMMARY

INCREMENTAL TRANSFER CAPABILITY

SONI has developed a methodology which assesses future generation connections in Northern Ireland (NI), and assigns each individual connection a Firm Access Quantity (FAQ) for the current year, and future years out to 2018. The methodology makes use of an Incremental Transfer Capability analysis tool already used by SONI in transmission capability analysis used in its Transmission Seven Year Capacity Statement. The analysis calculates access figures for four demand scenarios- winter maximum, autumn maximum, summer maximum and summer minimum- and the overall FAQ for each generator, for any year, is the minimum access figure calculated from the four demands scenarios for that year. The generators included in this year's ITC analysis comprised of only those with planning approval, as of the freeze date of 31/05/2012, and are studied in an order based on the date planning approval was received.

INDICATIVE RESULTS FOR 2012-2018

The graph and table below in figure S.1 and table S.1 respectively present the indicative results for the years 2011-2018 inclusive. Figure S.1 displays the total amount of FAQ for all generation, for the four demand scenarios, on a year by year basis. Table S.1 presents the FAQs for each individual generator studied on a year by year basis.

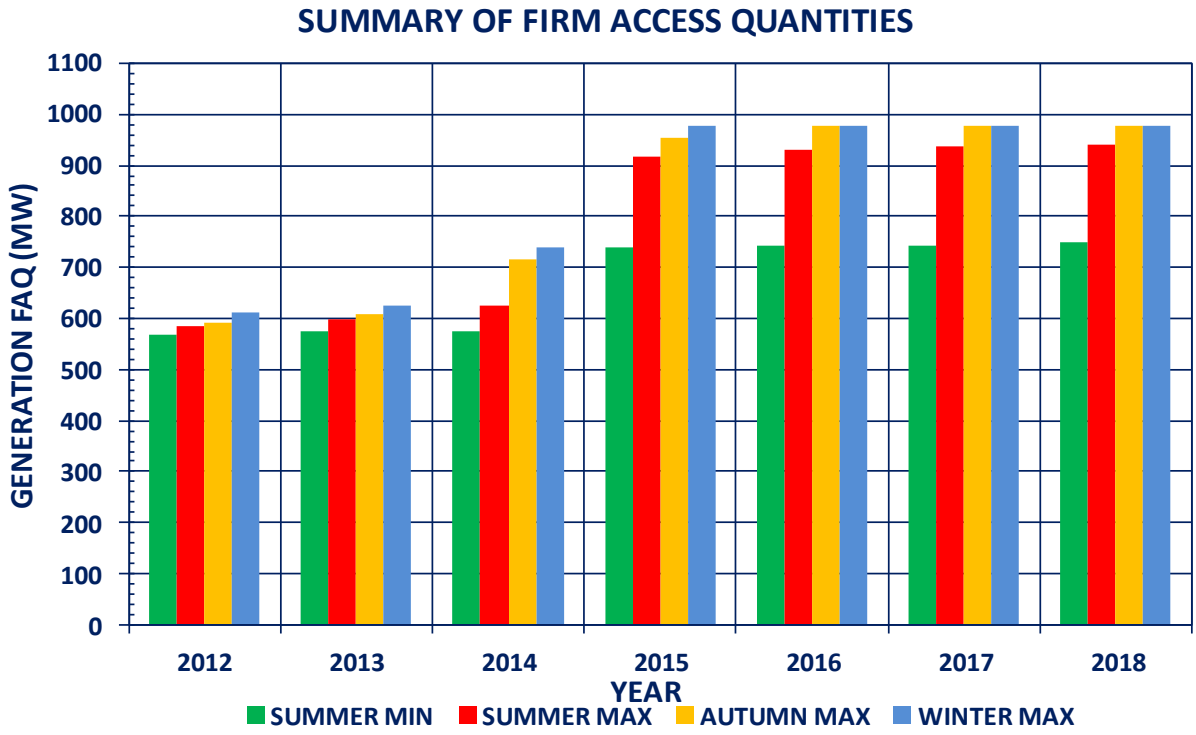

Figure S.1: Graph Showing total FAQ for 2011-2016

	GENERATOR	MEC	2012	2013	2014	2015	2016	2017	2018
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	0	0	0	7.5	7.5	7.5	7.5
9	GORTFINBAR	12.5	0	0	0	12.5	12.5	12.5	12.5
10	TIEVENAMEENTA	37.5	0	0	0	37.5	37.5	37.5	37.5
11	CREGGANCONROE	20.7	0	0	0	20.7	20.7	20.7	20.7
12	CROCKDUN	12.5	0	0	0	12.5	12.5	12.5	12.5
13	ALTAHULLION 3	30	0	0	0	30	30	30	30
14	DUNMORE	21	0	0	0	21	21	21	21
15	INISHATIVE	13.8	0	0	0	13.8	13.8	13.8	13.8
16	PIGEON TOP	20.7	0	0	0	0	2	5	10
17	CORNAVARROW	36	0	0	0	0	0	0	0
18	SEEGRONAN	18	0	0	0	0	0	0	0
19	MAYDOWN BIOMASS	15	0	0	0	0	0	0	0
20	DUNBEG	42	0	0	0	0	0	0	0
21	ORA MORE	15	0	0	0	0	0	0	0
22	CASTLECRAIG	25	0	0	0	0	0	0	0
23	GLENCONWAY	20	0	0	0	0	0	0	0
24	ESHMORE	9	0	0	0	9	9	9	9
25	BROCKAGHBOY	45	0	0	0	0	0	0	0
26	CREAGH CONCRETE	6	6	6	6	6	6	6	6
27	GLENBUCK 2	6.9	0	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL	159.4	166.3	166.3	330.8	332.8	335.8	340.8

Table S.1: Indicative ITC Results for 2011-2018

1 INTRODUCTION

The increasing penetration of renewable generation in Northern Ireland (NI) results in a greater potential for thermal overloads on key transmission circuits in the North West (NW) region. This generally occurs when system loads are low, and renewable generation is high, meaning that there is insufficient local load to absorb the renewable generation, and exports onto the transmission system are high as a result.

In the short term, the TSO has dealt with this problem by using Special Protection Schemes (SPS), or by constraining wind off. Medium to longer term plans drawn up by Northern Ireland Electricity (NIE) involve the upgrading of circuits in the area, and construction of additional circuits. These plans are detailed in their most recent Transmission Investment Plan (TIP).

In order to assess the impact of new generation connections on the NI transmission system, SONI has carried out a full Incremental Transfer Capacity Analysis (ITC). The purpose of this ITC analysis is to provide clear information to generators wishing to connect to the system of network constraints, and the timings of network investment projects to be carried out to remove constraints. SONI is pleased to publish the results of the first ITC analysis performed on the NI transmission network.

1.1 OUTLINE OF REPORT

Sections 2-8 provide a summary of each year of analysis, including new transmission infrastructure developments and ITC results for generation connections.

Section 9 provides an analysis of FAQs for all 275/110/33 kV nodes in NI in 2018, beyond that which has already been allocated as part of this ITC process. These are purely to give an indication of what nodes new generators could connect to and potentially receive firm access.

Appendix A provides detailed results for each individual generation connection.

1.2 THE QUEUING SYSTEM

Figure 1.1 below describes the queuing system employed in this ITC process. All generators connected to the system before 31st March 2012, and all generators with connection offers accepted before the 31st December 2010 are assumed to have full FAQ allocated to them, i.e. their FAQ is equal to their MEC. These generators are represented by boxes 1 and 2 in figure 1.1.

All other generators in the connection process are assessed using the ITC methodology. To reflect the fact that there are various stages in the connection process, generators are queued depending on how advanced they are through the connections process. The various stages of this are displayed in boxes 3 - 5 in figure 1.1.

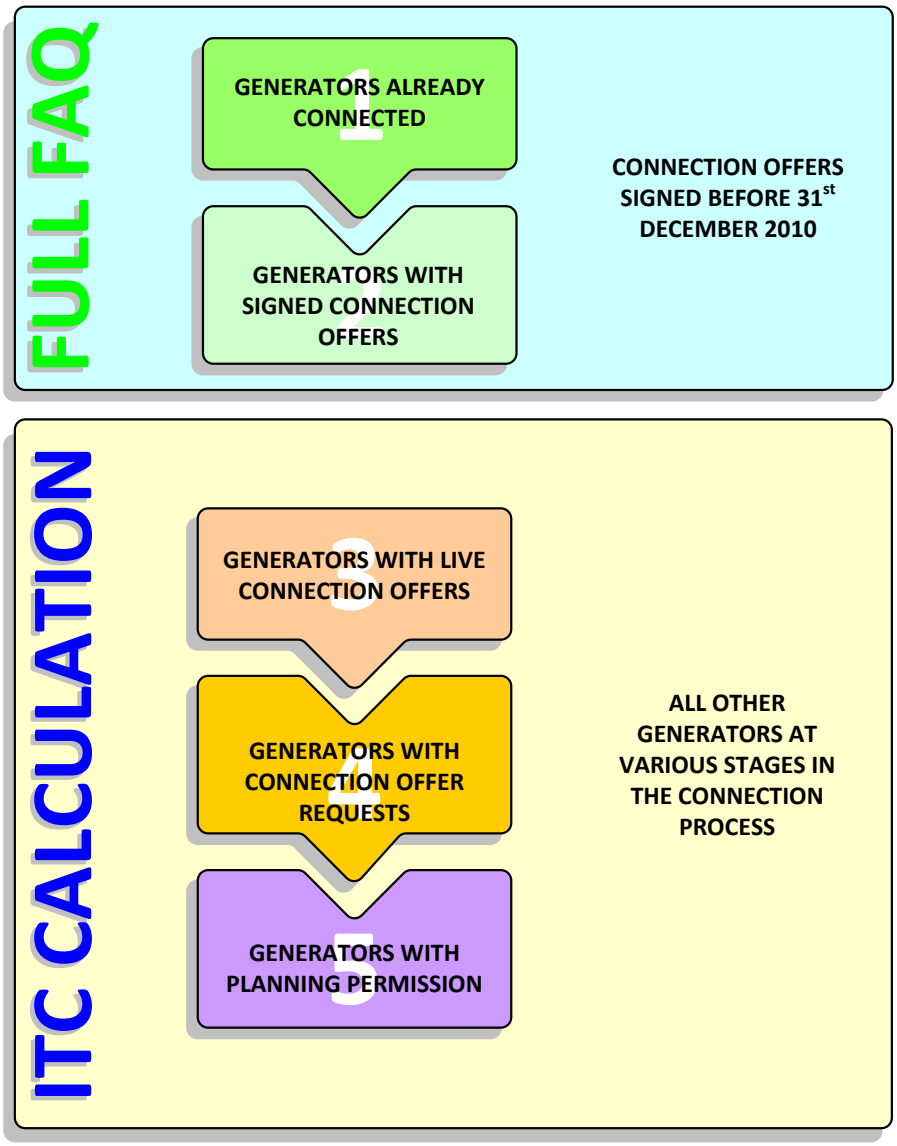

Figure 1.1: Diagram Explaining the Queuing Hierarchy

2 2012

2.1 NETWORK DEVELOPMENTS IN 2012

	DEVELOPMENT	NOTES
1	MAGHERAKEEL WIND FARM CLUSTER	Wind farm cluster, connecting into 110kV substation at Omagh.
2	OMAGH - DUNGANNON CIRCUITS	Uprating of existing 110kV A and B circuits between Omagh and Dungannon to 186/191/193 MVA.[1]
3	KILLYMALLAGHT WIND CLUSTER	Killymallaght wind farm cluster, connecting into the 110kV circuit between Coolkeeragh and Strabane.

Table 3.1: List of NI Network Reinforcements in 2012

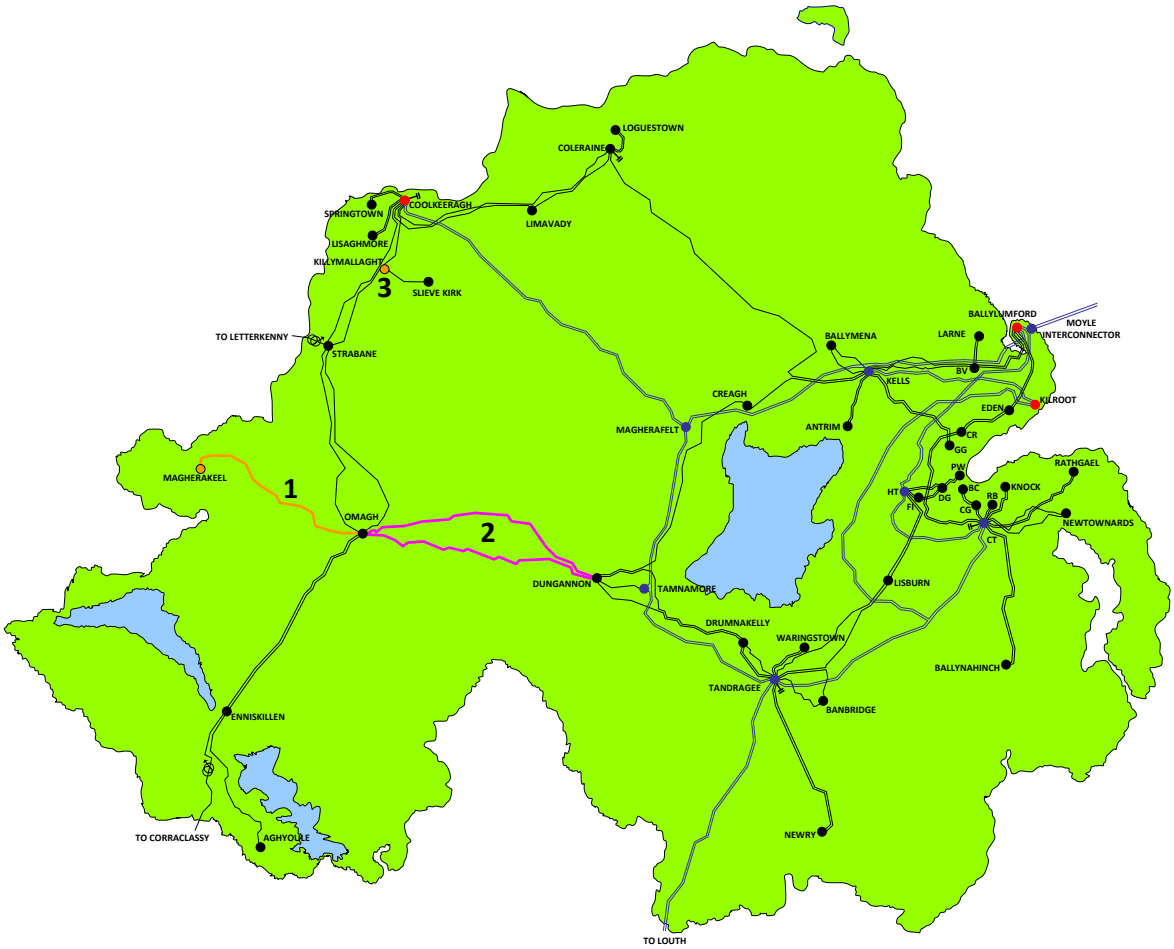

Figure 2.1: Map of NI Network Reinforcements in 2012

[1] These circuits will initially be limited to a continuous rating of 150MVA, due to the rating of switchgear at Dungannon. This limitation will be removed by 2014 when refurbishment of Dungannon Mesh is complete.

2.2 RESULTS FOR 2012 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	0	7.5	7.5	0
9	GORTFINBAR	12.5	10	0	12.5	12.5	0
10	TIEVENAMEENTA	37.5	0	0	5	25	0
11	CREGGANCONROE	20.7	0	0	0	0	0
12	CROCKDUN	12.5	0	0	0	0	0
13	ALTAHULLION 3	30	0	0	0	0	0
14	DUNMORE	21	0	0	0	0	0
15	INISHATIVE	13.8	0	0	0	0	0
16	PIGEON TOP	20.7	0	0	0	0	0
17	CORNAVARROW	36	0	0	0	0	0
18	SEEGRONAN	18	0	0	0	0	0
19	MAYDOWN BIOMASS	15	0	0	0	0	0
20	DUNBEG	42	0	0	0	0	0
21	ORA MORE	15	0	0	0	0	0
22	CASTLECRAIG	25	0	0	0	0	0
23	GLENCONWAY	20	0	0	0	0	0
24	ESHMORE	9	0	0	0	0	0
25	BROCKAGHBOY	45	0	0	0	0	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	0	0	0	0	0
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	176.9	159.4	184.4	204.4	159.4
TOTAL NON FIRM	390.6	408.1	383.1	363.1	408.1

Table 2.2: ITC Results for 2012

3 2013

3.1 NETWORK DEVELOPMENTS IN 2013

	DEVELOPMENT	NOTES
1	KELLS - COLERAINE PHASE 1	Uprating of a 22km section of the existing 110kV circuit between Coleraine and Kells to 186/191/193 MVA.
2	BALLYLUMFORD - EDEN CIRCUITS	Uprating of the existing 110kV A and B circuits between Ballylumford and Eden to 157/170/178 MVA.
3	ENNISKILLEN - OMAGH CIRCUITS (PH 1)	Uprating of the existing 110kV A and B circuits between Enniskillen and Omagh to 109/119/124 MVA.

Table 3.1: List of NI Network Reinforcements in 2013

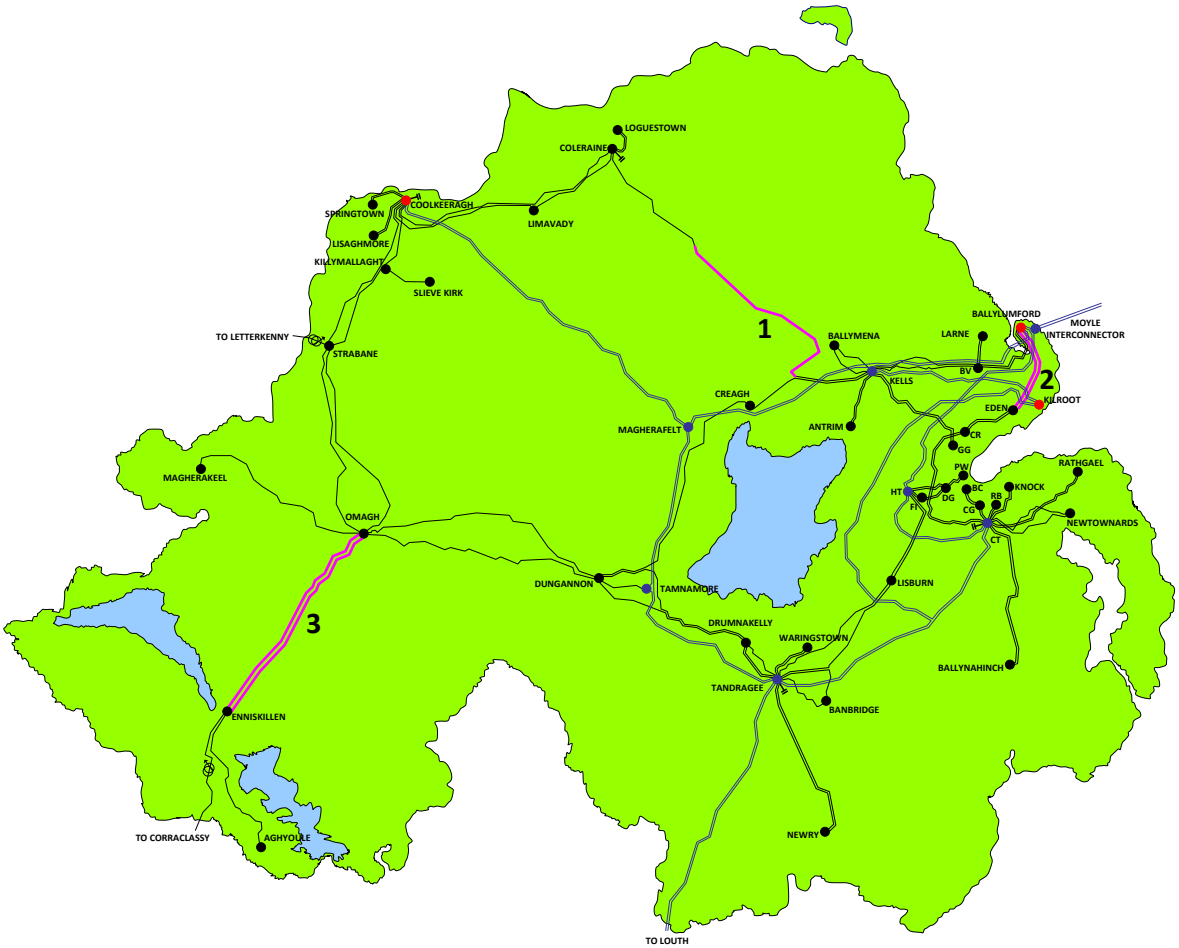

Figure 3.1: Map of NI Network Reinforcements in 2013

3.2 RESULTS FOR 2013 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	0	7.5	7.5	0
9	GORTFINBAR	12.5	12.5	0	12.5	12.5	0
10	TIEVENAMEENTA	37.5	3	0	15	30	0
11	CREGGANCONROE	20.7	0	0	0	0	0
12	CROCKDUN	12.5	0	0	0	0	0
13	ALTAHULLION 3	30	0	0	0	0	0
14	DUNMORE	21	0	0	0	0	0
15	INISHATIVE	13.8	0	0	0	0	0
16	PIGEON TOP	20.7	0	0	0	0	0
17	CORNAVARROW	36	0	0	0	0	0
18	SEEGRONAN	18	0	0	0	0	0
19	MAYDOWN BIOMASS	15	0	0	0	0	0
20	DUNBEG	42	0	0	0	0	0
21	ORA MORE	15	0	0	0	0	0
22	CASTLECRAIG	25	0	0	0	0	0
23	GLENCONWAY	20	0	0	0	0	0
24	ESHMORE	9	0	0	0	0	0
25	BROCKAGHBOY	45	0	0	0	0	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	189.3	166.3	201.3	216.3	166.3
TOTAL NON FIRM	378.2	401.2	366.2	351.2	401.2

Table 3.2: ITC Results for 2013

4 2014

4.1 NETWORK DEVELOPMENTS IN 2014

	DEVELOPMENT	NOTES
1	KELLS - COLERAINE PHASES 2 & 3	Uprate remaining sections of the existing 110kV circuit between Coleraine and Kells to 186/191/193 MVA.
2	EDEN- CARNMONEY CIRCUITS	Uprating of the existing 110kV A and B circuits between Eden and Carnmoney to 157/170/178 MVA.
3	REACTIVE COMPENSATION	Reactive compensation installed at Castlereagh, Coolkeeragh and Tandragee- 100 Mvar at each site.
4	DUNGANNON MESH REFURBISHMENT	Refurbishment of Dungannon Mesh, allowing full rating of Omagh-Dungannon 110kV circuits to be applied.

Table 4.1: List of NI Network Reinforcements in 2014

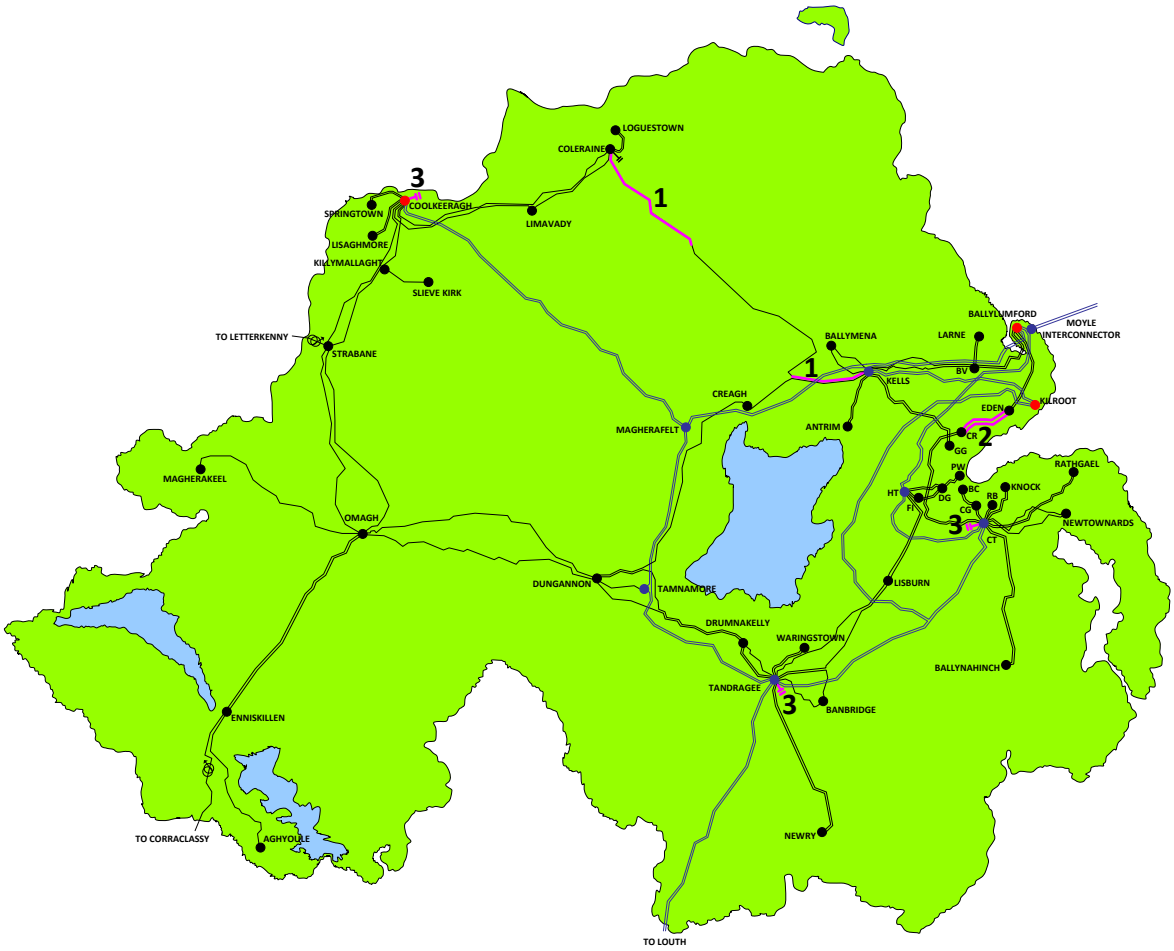

Figure 4.1: Map of NI Network Reinforcements in 2014

4.2 RESULTS FOR 2014 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	0	7.5	7.5	0
9	GORTFINBAR	12.5	12.5	0	12.5	12.5	0
10	TIEVENAMEENTA	37.5	30	0	37.5	37.5	0
11	CREGGANCONROE	20.7	0	0	20.7	20.7	0
12	CROCKDUN	12.5	0	0	12.5	12.5	0
13	ALTAHULLION 3	30	0	0	30	30	0
14	DUNMORE	21	0	0	21	21	0
15	INISHATIVE	13.8	0	0	0	13.8	0
16	PIGEON TOP	20.7	0	0	0	10	0
17	CORNAVARROW	36	0	0	0	0	0
18	SEEGRONAN	18	0	0	0	0	0
19	MAYDOWN BIOMASS	15	0	0	0	0	0
20	DUNBEG	42	0	0	0	0	0
21	ORA MORE	15	0	0	0	0	0
22	CASTLECRAIG	25	0	0	0	0	0
23	GLENCONWAY	20	0	0	0	0	0
24	ESHMORE	9	0	0	0	0	0
25	BROCKAGHBOY	45	0	0	0	0	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	216.3	166.3	308	331.8	166.3
TOTAL NON FIRM	351.2	401.2	259.5	235.7	401.2

Table 4.2: ITC Results for 2014

5 2015

5.1 NETWORK DEVELOPMENTS IN 2015

	DEVELOPMENT	NOTES
1	TAMNAMORE SUBSTATION PHASE 2	Completion of 275/110kV substation at Tamnamore, including transfer of 110kV circuits from Dungannon.
2	OMAGH - TAMNAMORE CIRCUIT 3	New 110kV circuit, rated at 186/191/193 MVA, including connection of Gort cluster.
3	GORT WIND CLUSTER	Wind farm cluster, connecting into new 110kV circuit between Omagh and Dungannon.
4	LIMAVADY WIND CLUSTER	Wind farm cluster, connecting into existing 110kV substation at Limavady.
5	MID ANTRIM WIND CLUSTER	Wind farm cluster, connecting into existing 110kV circuit between Coleraine and Kells.
6	TREMOGE WIND CLUSTER	Wind farm cluster, connecting into existing 110kV circuit between Omagh and Dungannon.

Table 5.1: List of NI Network Reinforcements in 2015

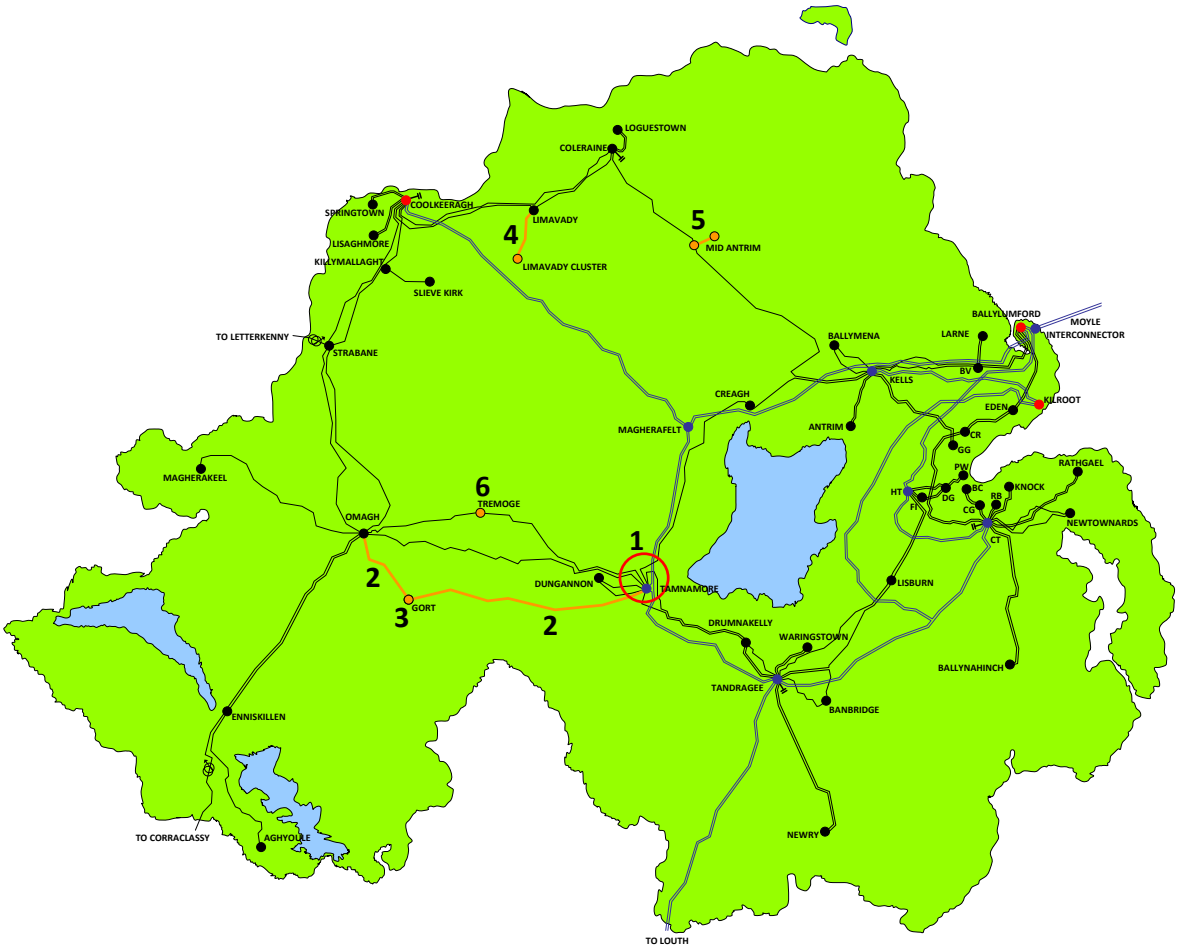

Figure 5.1: Map of NI Network Reinforcements in 2015

5.2 RESULTS FOR 2015 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	7.5	7.5	7.5	7.5
9	GORTFINBAR	12.5	12.5	12.5	12.5	12.5	12.5
10	TIEVENAMEENTA	37.5	37.5	37.5	37.5	37.5	37.5
11	CREGGANCONROE	20.7	20.7	20.7	20.7	20.7	20.7
12	CROCKDUN	12.5	12.5	12.5	12.5	12.5	12.5
13	ALTAHULLION 3	30	30	30	30	30	30
14	DUNMORE	21	21	21	21	21	21
15	INISHATIVE	13.8	13.8	13.8	13.8	13.8	13.8
16	PIGEON TOP	20.7	20.7	0	20.7	20.7	0
17	CORNAVARROW	36	36	0	36	36	0
18	SEEGRONAN	18	18	0	18	18	0
19	MAYDOWN BIOMASS	15	15	0	15	15	0
20	DUNBEG	42	42	0	42	42	0
21	ORA MORE	15	15	0	15	15	0
22	CASTLECRAIG	25	0	0	10	25	0
23	GLENCONWAY	20	20	0	20	20	0
24	ESHMORE	9	9	9	9	9	9
25	BROCKAGHBOY	45	10	0	37	45	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	507.5	330.8	544.5	567.5	330.8
TOTAL NON FIRM	60	236.7	23	0	236.7

Table 5.2: ITC Results for 2015

Generators highlighted in **blue** in table 5.2 above would be likely to require voltage support, beyond that already planned by NIE, to receive their corresponding FAQ described in the table.

6 2016

6.1 NETWORK DEVELOPMENTS IN 2016

	DEVELOPMENT	NOTES
1	COOLKEERAGH-MAGHERAFELT	Uprating of the existing 275kV double circuit between Coolkeeragh and Magherafelt to 1000/1200 MVA.[2]
2	NORTH-WEST 110kV CIRCUITS	Uprating of existing 110kV circuit from Coolkeeragh-Limavady-Coleraine to 186/191/193 MVA.
3	CAM WIND CLUSTER	Wind farm cluster, connecting into existing 110kV substation at Coleraine.
4	ENNISKILLEN - OMAGH CIRCUITS (PH 2)	Uprating of the existing 110kV A and B circuits between Enniskillen and Omagh to 186/191/193 MVA.

Table 6.1: List of NI Network Reinforcements in 2016

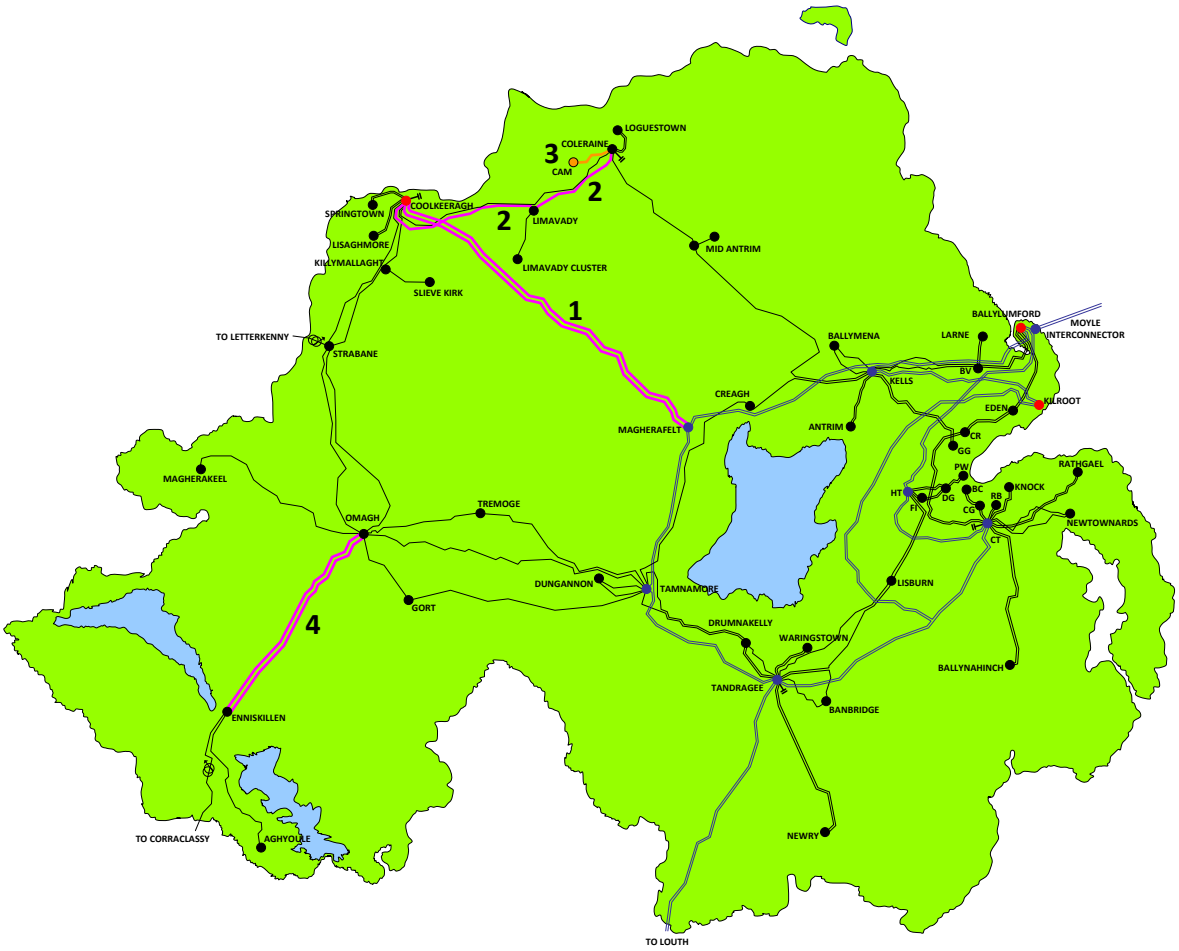

Figure 6.1: Map of NI Network Reinforcements in 2016

[2] Circuit will be limited by existing cable section at Coolkeeragh to 761/761/837 MVA.

6.2 RESULTS FOR 2016 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	7.5	7.5	7.5	7.5
9	GORTFINBAR	12.5	12.5	12.5	12.5	12.5	12.5
10	TIEVENAMEENTA	37.5	37.5	37.5	37.5	37.5	37.5
11	CREGGANCONROE	20.7	20.7	20.7	20.7	20.7	20.7
12	CROCKDUN	12.5	12.5	12.5	12.5	12.5	12.5
13	ALTAHULLION 3	30	30	30	30	30	30
14	DUNMORE	21	21	21	21	21	21
15	INISHATIVE	13.8	13.8	13.8	13.8	13.8	13.8
16	PIGEON TOP	20.7	20.7	2	20.7	20.7	2
17	CORNAVARROW	36	36	0	36	36	0
18	SEEGRONAN	18	18	0	18	18	0
19	MAYDOWN BIOMASS	15	15	0	15	15	0
20	DUNBEG	42	42	0	42	42	0
21	ORA MORE	15	15	0	15	15	0
22	CASTLECRAIG	25	15	0	25	25	0
23	GLENCONWAY	20	20	0	20	20	0
24	ESHMORE	9	9	9	9	9	9
25	BROCKAGHBOY	45	10	0	45	45	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	522.5	332.8	567.5	567.5	332.8
TOTAL NON FIRM	45	234.7	0	0	234.7

Table 6.2: ITC Results for 2016

Generators highlighted in **blue** in table 5.2 above would be likely to require voltage support, beyond that already planned by NIE, to receive their corresponding FAQ described in the table.

7 2017

7.1 NETWORK DEVELOPMENTS IN 2017

	DEVELOPMENT	NOTES
1	NORTH-WEST 110kV CIRCUITS	Uprating of existing 110kV circuit from Coolkeeragh-Coleraine to 186/191/193 MVA, turn into Limavady.
2	SECOND NORTH-SOUTH TIE-LINE	New 1500 MVA circuit between new 275/400kV substation at Turleenan, and Woodland in RoI.
3	LISBURN - HANNAHSTOWN	Uprating of existing 110kV circuits between Lisburn and Hannahstown to 144/166 MVA.
4	DRUMQUIN WIND CLUSTER	Wind farm cluster, connecting into existing 110kV circuits between Enniskillen and Omagh.

Table 7.1: List of NI Network Reinforcements in 2017

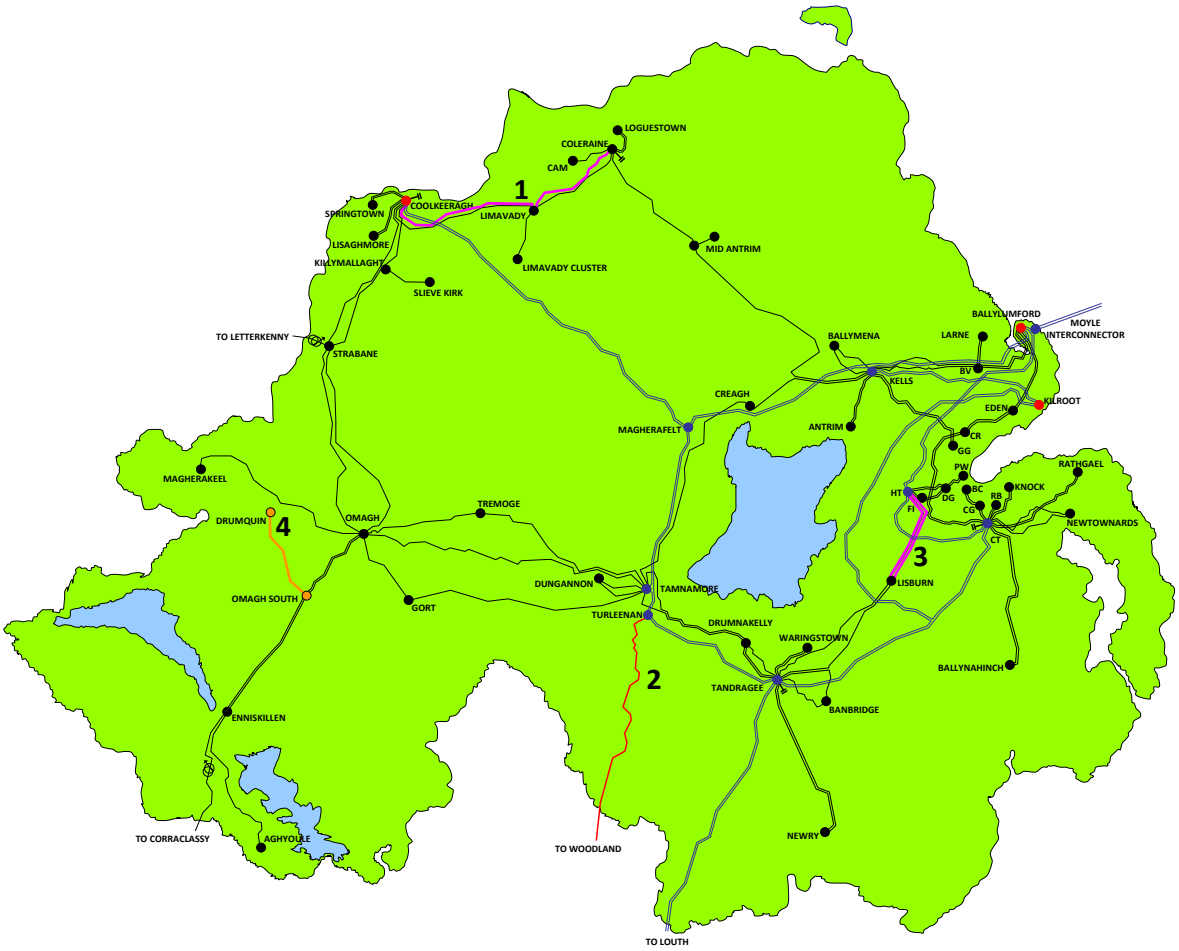

Figure 7.1: Map of NI Network Reinforcements in 2017

7.2 RESULTS FOR 2017 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	7.5	7.5	7.5	7.5
9	GORTFINBAR	12.5	12.5	12.5	12.5	12.5	12.5
10	TIEVENAMEENTA	37.5	37.5	37.5	37.5	37.5	37.5
11	CREGGANCONROE	20.7	20.7	20.7	20.7	20.7	20.7
12	CROCKDUN	12.5	12.5	12.5	12.5	12.5	12.5
13	ALTAHULLION 3	30	30	30	30	30	30
14	DUNMORE	21	21	21	21	21	21
15	INISHATIVE	13.8	13.8	13.8	13.8	13.8	13.8
16	PIGEON TOP	20.7	20.7	5	20.7	20.7	5
17	CORNAVARROW	36	36	0	36	36	0
18	SEEGRONAN	18	18	0	18	18	0
19	MAYDOWN BIOMASS	15	15	0	15	15	0
20	DUNBEG	42	42	0	42	42	0
21	ORA MORE	15	15	0	15	15	0
22	CASTLECRAIG	25	20	0	25	25	0
23	GLENCONWAY	20	20	0	20	20	0
24	ESHMORE	9	9	9	9	9	9
25	BROCKAGHBOY	45	10	0	45	45	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	527.5	335.8	567.5	567.5	335.8
TOTAL NON FIRM	40	231.7	0	0	231.7

Table 7.2: ITC Results for 2017

Generators highlighted in **blue** in table 5.2 above would be likely to require voltage support, beyond that already planned by NIE, to receive their corresponding FAQ described in the table.

8 2018

8.1 NETWORK DEVELOPMENTS IN 2018

	DEVELOPMENT	NOTES
1	BROCKAGHBOY WIND FARM CLUSTER	Wind farm cluster, connecting into 110kV substation at Limavady.
2	AIRPORT ROAD SUBSTATION	Establishment of a new 110/33 kV substation at Belfast harbour, connecting into Castlereagh.

Table 8.1: List of NI Network Reinforcements in 2018

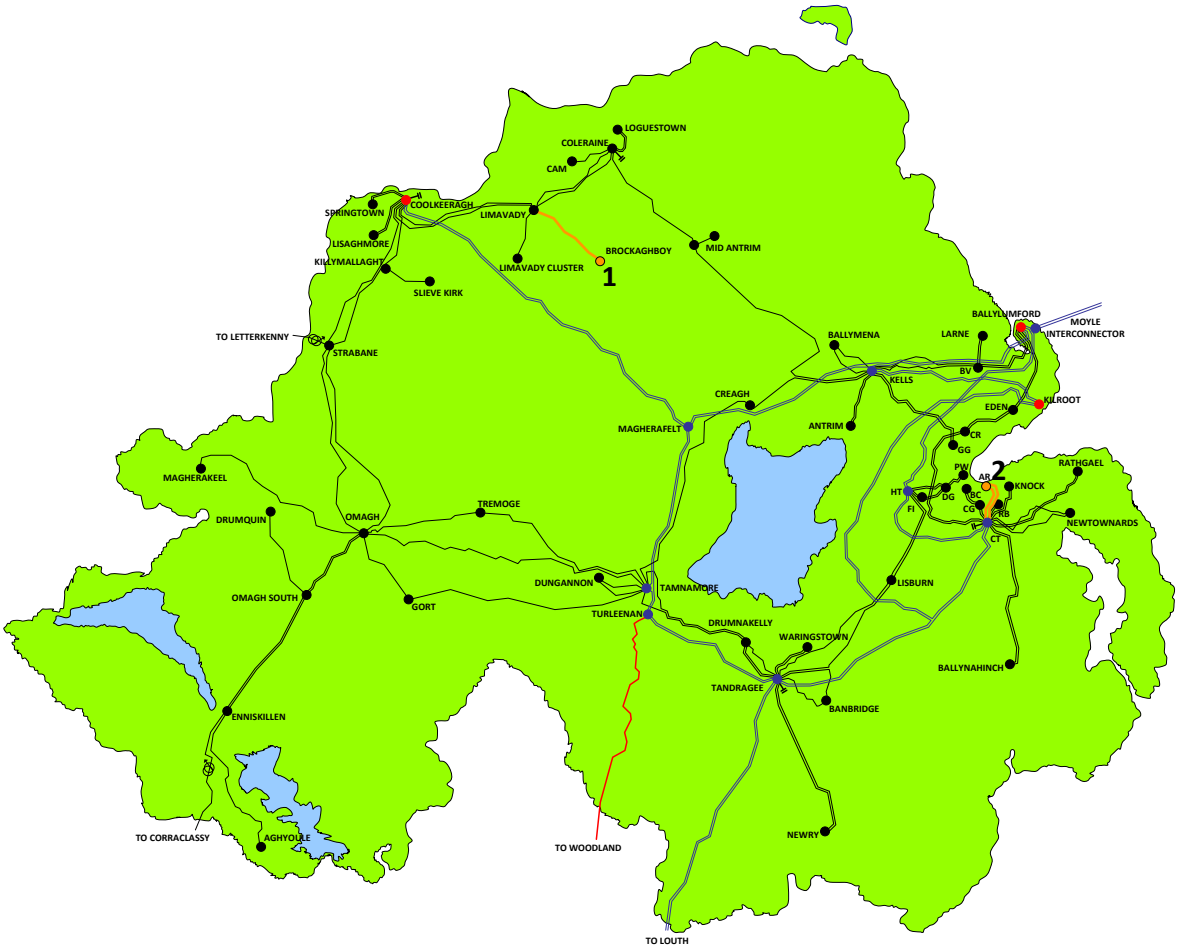

Figure 8.1: Map of NI Network Reinforcements in 2018

8.2 RESULTS FOR 2018 ITC RUN

	GENERATOR	MEC	SUMMER MAX	SUMMER MIN	AUTUMN MAX	WINTER MAX	FAQ
1	CRIGHSHANE	32.2	32.2	32.2	32.2	32.2	32.2
2	CHURCH HULL	18.4	18.4	18.4	18.4	18.4	18.4
3	SLIEVE DIVENA 2	20	20	20	20	20	20
4	THORNOG	10	10	10	10	10	10
5	LONG MOUNTAIN	24	24	24	24	24	24
6	CARRICKATANE	22.5	22.5	22.5	22.5	22.5	22.5
7	CARN HILL	13.8	13.8	13.8	13.8	13.8	13.8
8	ALTAMOOSKIN	7.5	7.5	7.5	7.5	7.5	7.5
9	GORTFINBAR	12.5	12.5	12.5	12.5	12.5	12.5
10	TIEVENAMEENTA	37.5	37.5	37.5	37.5	37.5	37.5
11	CREGGANCONROE	20.7	20.7	20.7	20.7	20.7	20.7
12	CROCKDUN	12.5	12.5	12.5	12.5	12.5	12.5
13	ALTAHULLION 3	30	30	30	30	30	30
14	DUNMORE	21	21	21	21	21	21
15	INISHATIVE	13.8	13.8	13.8	13.8	13.8	13.8
16	PIGEON TOP	20.7	20.7	10	20.7	20.7	10
17	CORNAVARROW	36	36	0	36	36	0
18	SEEGRONAN	18	18	0	18	18	0
19	MAYDOWN BIOMASS	15	15	0	15	15	0
20	DUNBEG	42	42	0	42	42	0
21	ORA MORE	15	15	0	15	15	0
22	CASTLECRAIG	25	25	0	25	25	0
23	GLENCONWAY	20	20	0	20	20	0
24	ESHMORE	9	9	9	9	9	9
25	BROCKAGHBOY	45	10	0	45	45	0
26	CREAGH CONCRETE	6	6	6	6	6	6
27	GLENBUCK 2	6.9	6.9	6.9	6.9	6.9	6.9
28	TULLYNAGEER	12.5	12.5	12.5	12.5	12.5	12.5

TOTAL FIRM	532.5	340.8	567.5	567.5	340.8
TOTAL NON FIRM	35	226.7	0	0	226.7

Table 8.2: ITC Results for 2018

Generators highlighted in **blue** in table 5.2 above would be likely to require voltage support, beyond that already planned by NIE, to receive their corresponding FAQ described in the table.

9 2018 NODAL ANALYSIS

This section has been included to give an indication of the FAQ remaining at all nodes in Northern Ireland in 2018, beyond that already allocated as part of this ITC process.

9.1 NODAL CAPACITIES FOR 2018

The maps below in figures 9.1, 9.1 and 9.3 highlight the capacity at each of the 275, 110 and 33 kV nodes in NI in 2018. All generation analysed in this ITC process has been set to their FAQ as assessed in 2018, and detailed in table 8.2. It must be noted that these values are based on individual studies of each node, and do not assess the cumulative effect of the addition of new generation to the transmission system.

The results highlight that there is no FAQ available in the North-West (NW) area of NI. This result is expected, as the analysis in this ITC process has shown that by 2018 there are still generators proposing to connect in the NW awaiting full FAQ allocation (see table 8.2).

Towards the east of NI, closer to the largest demand centres, and where the transmission system is strongest, all nodes provide some level of FAQ, ranging from 40 - 50 MW at weaker nodes, to in excess of 400 MW on the strong 275kV system. The figures in this section use the following key:

- A **red** node highlights a node with 0 MW of capacity
- A **yellow** node highlights a node with an excess of 400 MW of capacity

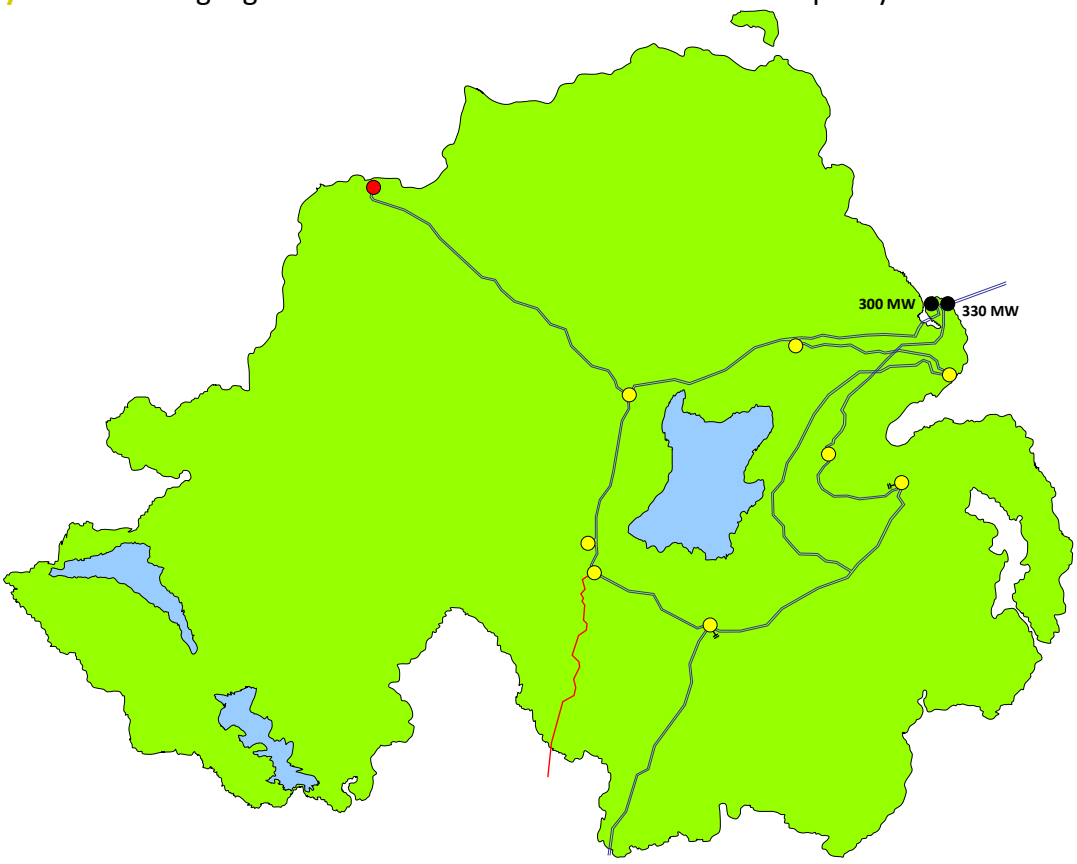

Figure 9.1: Capacities at 275kV Nodes in 2018

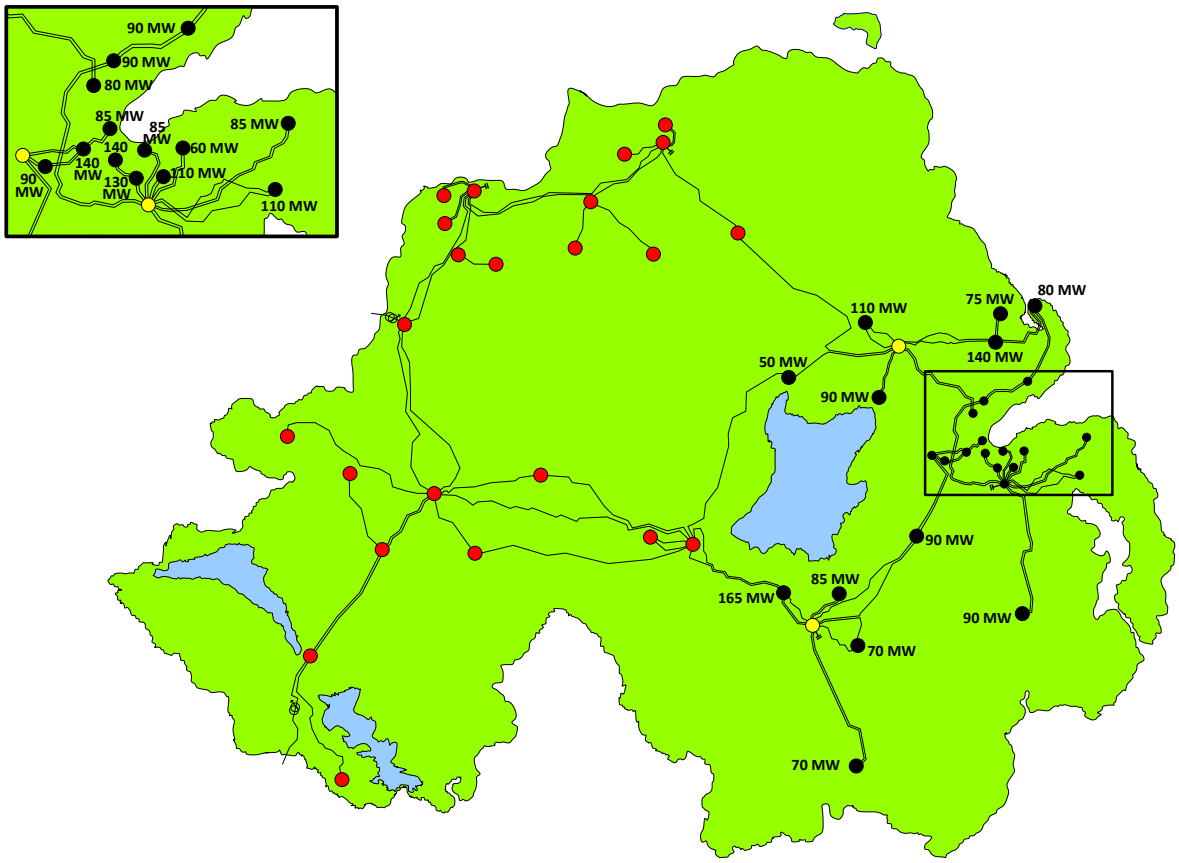

Figure 9.2: Capacities at 110kV Nodes in 2018

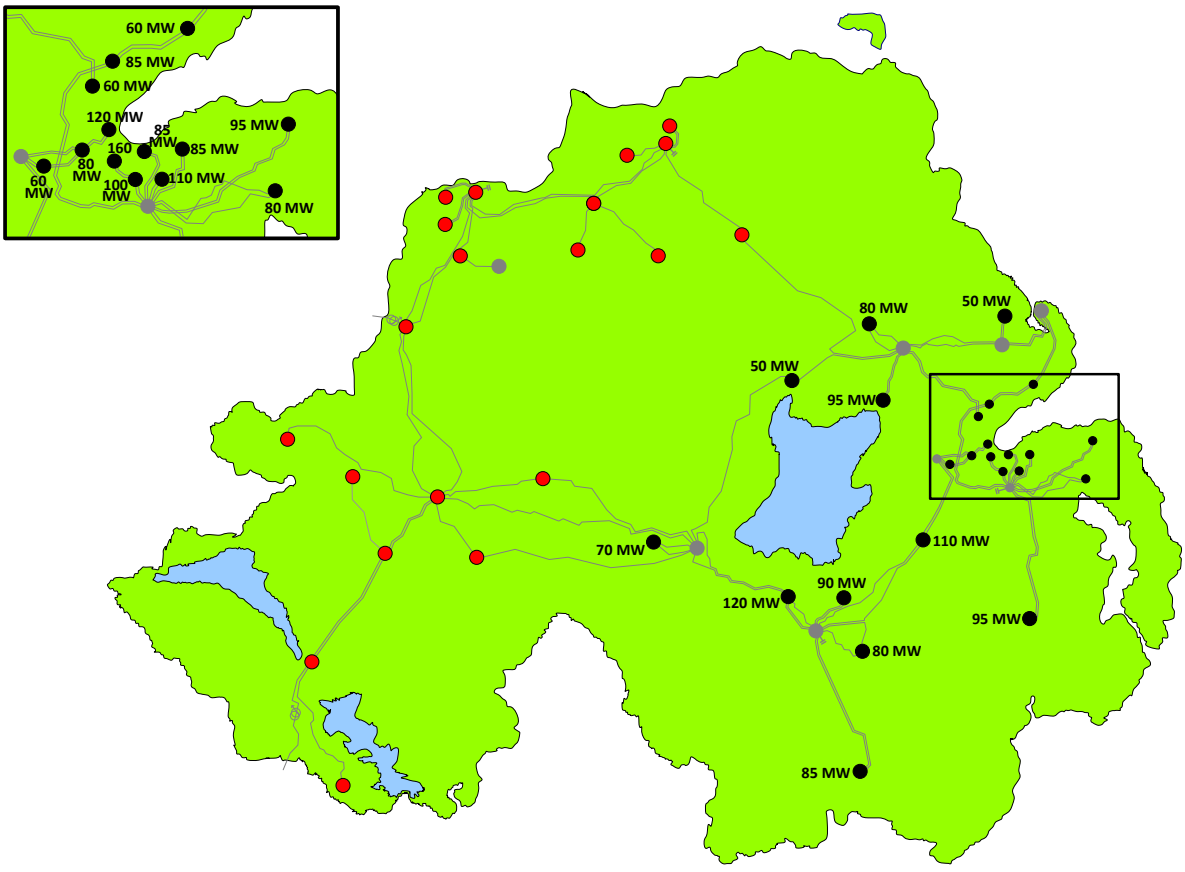

Figure 9.3: Capacities at 33kV Nodes in 2018