

Moyle Interconnector Limited
Interconnector Capacity Calculation
September 2011



Executive Summary

Moyle Interconnector Limited (“MIL”) owns and operates the submarine cables between converter stations at Ballycronan More in Islandmagee, County Antrim and Auchencrosh in Ayrshire that link the electricity transmission systems of Northern Ireland and Scotland. The cable and key components of the link have an engineering capacity of 500MW in each direction. However, limits applied for system security reasons by the Transmission System Operators (“TSOs”) at either end of the link mean that, at present, the full Moyle Interconnector engineering capacity cannot be made available to electricity traders for flows between the Betta and SEM markets. The current capacity available to interconnector users is shown in the following table..

Direction	Month	Capacity available to interconnector users	Capacity limit set by:
West to East	May - August	287 MW	NG/ GB System
	September - April	295 MW	SONI/ NI System
East to West	April - October	410 MW	SONI/ NI System
	November - March	450 MW	NG/ GB System

MIL, in conjunction with National Grid Electricity Transmission (NGET), Scottish Power Transmission (SPT)¹, the System Operator for Northern Ireland (SONI) and NIE, the Northern Ireland transmission network owner, has prepared this statement to outline how available capacity on both the GB National Electricity Transmission System (“the GB system”) and the Northern Ireland Electricity Transmission System (“the NI system”) is assessed for the physical transfer of power between Northern Ireland and Scotland using the Moyle Interconnector².

This is a requirement of Article 15(2) of Regulation EC 714/2009 on conditions for access to the network for cross-border exchanges in electricity which states that “a general scheme for the calculation of total transfer capacity and the transmission reliability margin based on the electrical and physical features of the network” shall be published (subject to the approval of the regulatory authorities).

Furthermore, it is a requirement of Article 16(3) of the same Regulation that “the maximum capacity of the interconnections and / or the transmission networks affecting cross-border flows shall be made available to market participants, complying with safety standards of secure network operation”.

¹ SPT is the owner of the transmission assets at the point on the GB transmission system where the Moyle Interconnector connects and NGET is the operator of the whole GB transmission system. For information on SPT and NGET see <http://www.scottishpower.com/EnergyNetworks.htm> and <http://www.nationalgrid.com/uk/Electricity/> respectively.

² For more information, see http://www.mutual-energy.com/The_Moyle_Interconnector/Index.php

The transfer limits identified in MIL's Connection Agreement³ with SONI were based on the capability of the NI transmission system. The existing import/export limits at the Ballycronan More Connection Point and the technical reasons for the limits are summarised below:

	RATING	LIMITING FACTOR
Import into NI	450MW (winter)	a. Largest single infeed to All-Island System. b. Thermal rating of local 110kV network. c. Voltage stability.
Import into NI	400MW (summer)	Thermal limit of local 275kV network
Export from NI	300MW (all seasons)	Voltage stability

To date, these import capacities have been fully available and utilised up to the indicated limits. Export capacity from NI (prior to February 2011) had not exceeded 80MW due to a contractual limitation on the Moyle Interconnector's Transmission Entry Capacity at the Auchencrosh Connection Point in Scotland.

MIL previously contracted for 80MW of Transmission Entry Capacity onto the GB system for imports into Scotland from Northern Ireland. This agreement was made in the context of Transmission Network Use of System ("TNUOS") charges being payable by MIL based on its level of Transmission Entry Capacity and minimal demand from its customers for Northern Ireland to Scotland capacity.

The capacity available to MIL to auction to its users prior to February 2011 was as follows (along with the limiting factor on the neighbouring transmission systems): -

Direction	Month	Capacity available to interconnector users	Capacity limit set by:
West to East	All Months	80 MW	Contractual choice of MIL in the GB regime
East to West	April - October	410 MW	SONI/ NI System
	November - March	450 MW	NG/ GB System

During 2010 National Grid Electricity Transmission (NGET) consulted (EMC-26) upon changes to the TNUOS charging regime for interconnectors. Subsequently, OFGEM did not veto NGET's decision that TNUOS charging will no longer apply to interconnectors meaning that Moyle would not have to pay TNUOS charges if it increased its Transmission Entry Capacity above 80MW. As a result, MIL has sought to maximise the transfer capacity in both directions up to the maximum capacity (500MW) of the link and submitted applications to this effect to both SONI and NGET in October 2010.

Following the work undertaken to respond to these applications and outlined in this document, the current capacity available to MIL to auction to its users from 01 February 2011 was determined and is shown in the table at the start of this section.

³ Moyle Interconnector entered into a connection agreement with SONI's predecessor on 26 June 2001. This agreement was novated to SONI on 31 October 2007 in order to comply with the requirements for SEM Go-Live on 1 November 2007.

This document sets out the work undertaken to arrive at these levels of available capacity together with future work to be undertaken by all concerned parties to investigate how and when the maximum capacity can be made available. Sections 1, 2, 3 and 7 (i.e. those referring to the GB network) have been prepared by NGET while sections 4, 5, 6 and 8 (i.e. those referring to the NI network) have been prepared by SONI. The content of this document was agreed upon by the relevant parties and approved for publication by the regulatory authorities NIAUR and Ofgem in September 2011.

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Signed for and on behalf of Moyle Interconnector Limited

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Signed for and on behalf of NIAUR

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Signed for and on behalf of Ofgem

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Signed for and on behalf of SONI

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Signed for and on behalf of NGET

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Appendix 1 – NGET Process for Assessing Capacity Modification Requests

1. General Scheme for Assessing Transfer Capacity

Under the current GB electricity framework (as of April 2011), interconnector operators are still signatories to the Connection and Use of System Code (CUSC), part of which sets out the process which has to be followed by an applicant for connection to the National Electricity Transmission System (“the GB system”) or for existing Transmission Entry Capacity (“capacity”) to be modified⁴. These arrangements are such that, upon receipt of an application by an interconnector developer to connect to, or to modify their existing connection to, the system, NGET as National Electricity Transmission System Operator (“system operator”) is obligated by its transmission licence to make a formal offer to the applicant within 3 months of the application being deemed to be ‘competent’⁵.

When considering applications for capacity on the system, NGET has to consider whether these connections or modifications require any network reinforcement. If action is required, further analysis is needed to establish the economic and efficient level of reinforcement necessary.

The cost of any such reinforcement is usually recovered through Transmission Network Use of System (TNUoS) charges (“network charges”). These charges are not levied on interconnectors as costs relating to cross-border flows are reflected through the Inter-TSO Compensation (ITC) mechanism in which any TSOs hosting flows are compensated by the TSOs at the origin and destination of the flow⁶.

Assets solely required to connect an individual user to the system which are not, and would not normally be, used by any other connected party (i.e. single user assets) are classed as ‘Transmission Connection Assets’. All connecting parties, including interconnector operators are required to pay for these ‘Transmission Connection Assets’ via a one off charge that is not passed through to interconnector users. Alternatively, they also have the option to undertake the construction, financing and ongoing maintenance of these connection assets themselves providing that this does not have a detrimental effect on system integrity, security and safety.

In order to provide offers for new connection applications (including by interconnector operators), it is also necessary to determine whether any local reinforcement works are required. This requirement must be assessed in accordance with principles set out in both Chapter 2 (Generation Connection Criteria) and Chapter 3 (Demand Connection Criteria) of the National Electricity Transmission System Security and Quality of Supply Standards (“security standards”)⁷. The criteria presented in the security

⁴ Following the anticipated certification of interconnectors as Transmission System Operators (“TSOs”) under the 3rd European Energy Package, the requirement for interconnectors to be signatories of the CUSC may need to be reviewed to ensure that it continues to provide a framework which suitably reflects the relationship between neighbouring TSOs (both onshore and interconnector).

⁵ In order for an application to be deemed ‘competent’, NGET must have received a completed application form, the relevant cleared application fee and the appropriate technical data.

⁶ The NGET proposal (ECM-026) to remove the obligation on interconnectors to pay Transmission Network Use of System (TNUoS) charges was not vetoed by Ofgem and came into effect from April 2010. Link to decision letter from Ofgem: <http://www.nationalgrid.com/NR/rdonlyres/46289F11-D100-4BC8-A791-6DEF891CC047/43450/ECM26decisionletterpublished041010.pdf>

⁷ For more information see <http://www.nationalgrid.com/uk/Electricity/Codes/gbsqsscode/>

standards represent the minimum requirements for the planning, development and operation of the system under Condition C17 of the Electricity Transmission Licence⁸.

In general, the security standards set out that, prior to any fault on the system, there should not be any:

- equipment loadings exceeding the pre-fault rating;
- voltages outside the pre-fault planning voltage limits; or
- system instability.

The corresponding standards required following certain secured faults⁹ on the system (under both intact and transmission outage conditions) are also set out. These calculations are made assuming background conditions whereby the interconnector is either at maximum import (Generation Connection criteria) or maximum export (Demand Connection criteria).

In addition to any local reinforcements, the connection or modification application must also be assessed against the principles set out in Chapter 4 of the security standards (Design of the Main Interconnected Transmission System). This assessment is similar to those carried out under Chapters 2 and 3 but involves transfer flows across all of the boundaries on the wider system rather than being limited to the local system around the connection point.

⁸ Under specific circumstances, licensees have the ability to apply to Ofgem for derogation from condition C17 in respect of these requirements.

⁹ Transmission faults that the system is designed to be able to withstand with no loss of supply.

2. Assessing Transfer Capacity in the case of the Moyle Interconnector

The rationale outlined in Section 1 is general to all interconnector applications under the current CUSC process. However, in the case of the application to increase the amount of capacity available to the Moyle Interconnector, there were a number of non-standard and legacy aspects which required consideration.

The Moyle Interconnector originally consisted of a 63km undersea cable between the converter stations in Northern Ireland and Scotland and a 64km overhead line from Auchencrosh (the converter station on the Scottish coast) to the existing Scottish system at Coylton (see Diagrams 1 and 2 below). The 64km overhead line is a single circuit connection, as opted for by MIL at the time they applied to SPT for a connection, in preference to the standard double circuit normally required under the security standards. Under the transitional arrangements at BETTA¹⁰, this right to deviate from the standard connection was 'grandfathered' into the GB agreements by way of a 'Variation to Connection Design' under Chapter 2 of the security standards. Under the regime in place in Scotland at the time of its original connection application, the cost of the over-land section of the Moyle Interconnector was charged in full to MIL. However, as part of the transition to BETTA, this section of the interconnector (the Auchencrosh – Coylton circuit) was assimilated (following a connection charge rebate to MIL) into the wider transmission system.

The physical capability of the Moyle Interconnector is 500MW in each direction and it has a Connection Entry Capacity (CEC) of 500MW. However, MIL originally only applied for a Transmission Entry Capacity (TEC) of 80MW in the direction Northern Ireland to GB due primarily to the fact that anticipated flows for their customers were expected to be in the opposite direction (i.e. GB to Northern Ireland) for the majority of the time. Subsequent to this original connection offer being signed by MIL, several windfarms have now connected (or are contracted to connect in the future) to the Auchencrosh - Coylton circuit with the effect that the amount of additional local capacity in the area available to all system users, including the Moyle Interconnector, is significantly reduced.

The obligation on MIL to pay network charges based on their level of TEC meant that they had a financial incentive to apply only for capacity which would be valued by their customers. The removal of this obligation to pay network charges effectively removed this financial incentive and, in conjunction with the requirements of the European 3rd Package legislation¹¹, led to the decision by MIL to make a formal 'Modification Application' to increase their TEC to as near to 500MW in both directions, up to the point at which system reinforcement is required. The reason for this caveat being included was that any

¹⁰ BETTA stands for 'British Electricity Transmission and Trading Arrangements' and took place in 2005. It was at this point that the New Electricity Trading Arrangements (NETA) introduced into England and Wales in 2001 to liberalise the electricity market were extended to Scotland.

¹¹ Article 16(3) of Regulation (EC) No 714/2009

reinforcements would take a number of years to complete¹² whereas capacity available before the requirement for reinforcement could be provided immediately.

Therefore when considering the 'Modification Application', the maximum additional transfer capacity available to MIL was taken to be the amount of capacity that the existing system could deliver before any local reinforcements were required. These were based on the 'Enabling Works' outlined in Chapter 13 of the CUSC¹³ which, at a minimum, include those reinforcements required to meet the following criteria:

1. achieve compliance with the "Pre-fault Criteria" set out in Chapter 2 of the security standards;
2. achieve compliance with the "Limits to Loss of Power Infeed Risks" set out in Chapter 2 of the security standards;
3. enable [NGET] to operate the National Electricity Transmission System in a safe manner;
4. resolve any fault level issues associated with the connection and/or use of system by the Connect and Manage Power Station;
5. comply with the minimum technical, design and operational criteria and performance requirements under the Grid Code;
6. meet other statutory obligations including but not limited to obligations under any Nuclear Site Licence Provisions Agreement; and
7. avoid any adverse impact on other Users.

The 'Variation to Connection Design' granted to MIL at BETTA is deemed to satisfy the other relevant requirements under Chapter 2 of the security standards provided that certain conditions (set out in paragraphs 2.16.1 to 2.16.3) are met. These state that the 'Variation to Connection Design' must not, other than in respect of the generation customer requesting it (i.e. MIL), immediately or in the foreseeable future:

- reduce the security of the wider system to below the minimum planning criteria specified in *Section 4*¹⁴; or
- result in additional investment or operational costs to any particular customer or overall, or a reduction in the security and quality of supply of the affected customers' connections to below the planning criteria in *this section* or *Section 3*, unless specific agreements are reached with affected customers; or

¹² The treatment of future system reinforcement is considered in Section 4.

¹³ For more information on the CUSC, see <http://www.nationalgrid.com/uk/Electricity/Codes/systemcode/contracts/>

¹⁴ It was determined, following transmission studies, that no wider reinforcements were triggered beyond those already identified to connect other new generation in the current generation background.

- compromise any transmission licensee's ability to meet other statutory obligations or licence obligations.

Taking this into account, the 'Enabling Works criteria' were assessed as follows:

1. The pre-fault criteria set out in Chapter 2 of the security standards were determined to be met provided that the seasonal pre-fault ratings of the Auchencrosh – Coylton single circuit, minus any firm capacity contracted to other Users connected to the line (including the existing MIL capacity), were not exceeded.
2. The total contracted generation (including the increase in firm capacity for MIL identified above) in the group was less than 1320MW and therefore it was determined that the Limits to Loss of Power Infeed Risks conditions of Chapter 2 of the security standards could be met.
3. On the basis that the additional firm capacity available to MIL was restricted by the pre-fault rating of the single Auchencrosh – Coylton circuit, it was determined that no equipment would exceed its design ratings and therefore that the increase in firm capacity would not impact on NGET's ability to operate the system in a safe manner.
4. It was assessed that the additional firm capacity would not raise the fault level infeeds beyond that of the equipment on the Auchencrosh – Coylton circuit.
5. It was assessed that the additional firm capacity would not have any impact on the ability of MIL or NGET to meet their respective Grid Code requirements.
6. It was determined that the increase in firm capacity available to MIL would not impact NGET's ability to meet its statutory obligations.
7. The local impact of the additional firm capacity due to the single circuit design has been negated by the restriction of access clauses in the Bilateral Agreement between NGET and MIL. The wider impacts were assessed and deemed to be within reasonable levels.

The process allowing a CUSC user to modify their capacity can be found in Appendix A. The detail regarding the technical assessment used to determine the additional capacity provided to MIL is available in Section 3.

Diagram 1: Transmission Network in South West Scotland

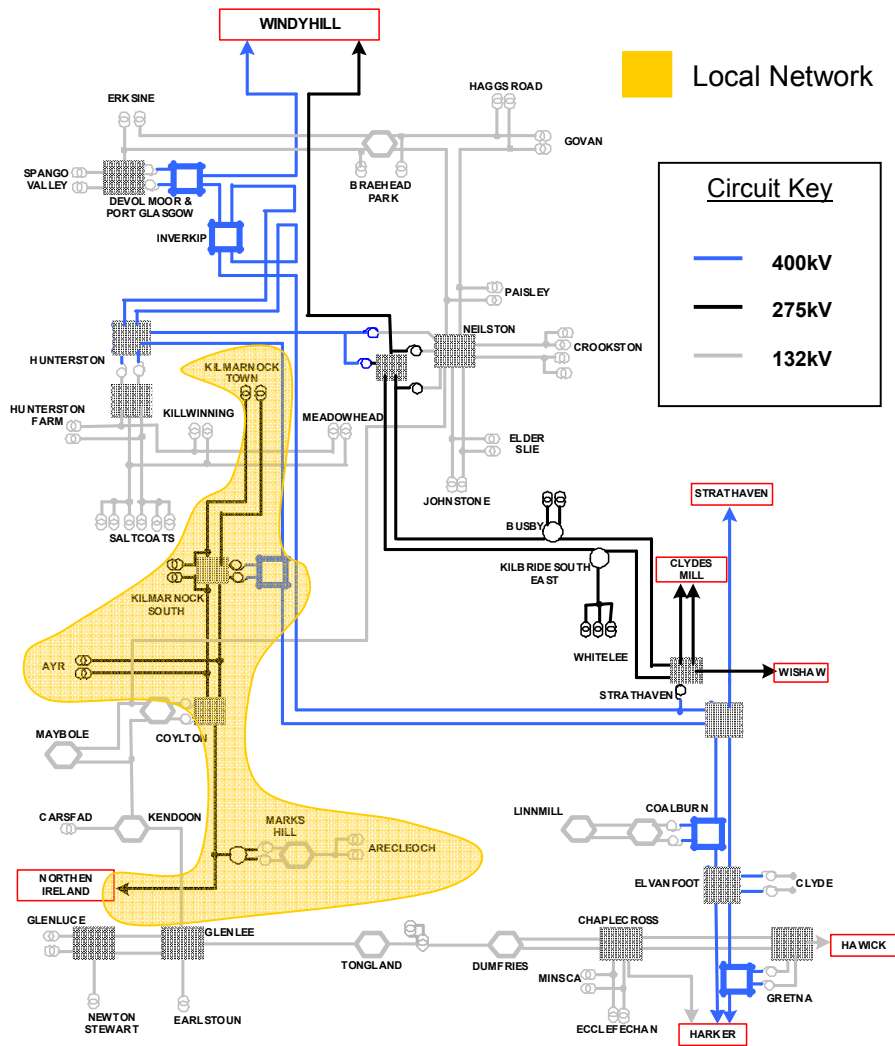
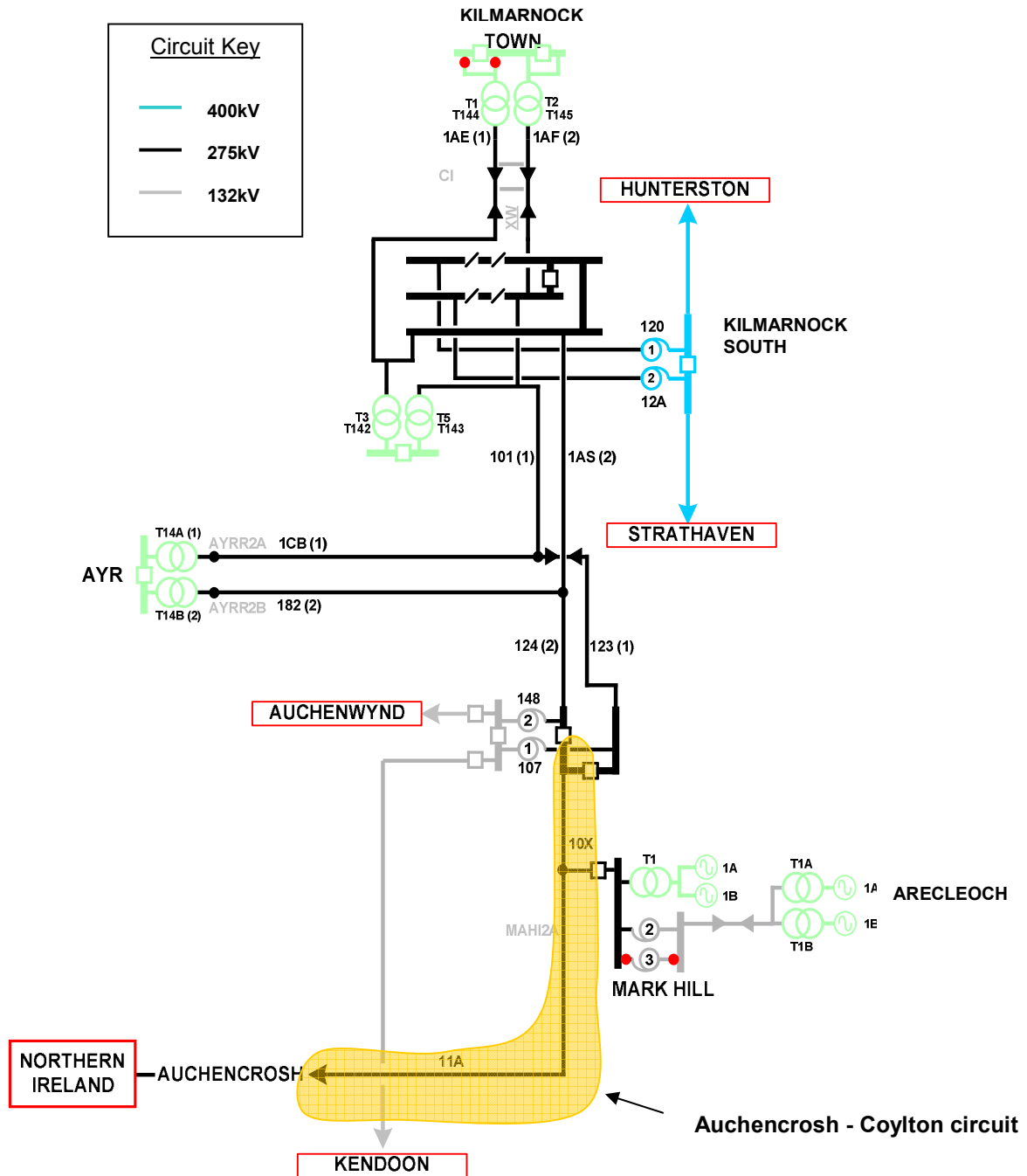


Diagram 2: Local Transmission Network around Moyle Interconnector



3. Technical Assessment Undertaken by SPT

The following section sets out the results achieved following the technical assessment undertaken by SPT which was carried out in accordance with the criteria outlined in Section 2. This mostly relates to the detailed calculations required to satisfy the first of the seven 'Enabling Works' criteria for flows in both directions across the Moyle Interconnector.

Northern Ireland to Scotland Capacity

SPT has undertaken the assessment of determining what additional capacity was available for MIL with the following local generation assumptions:

- Arecleoch Windfarm – 120 MW – Connected
- Mark Hill Windfarm – 56 MW – Connected

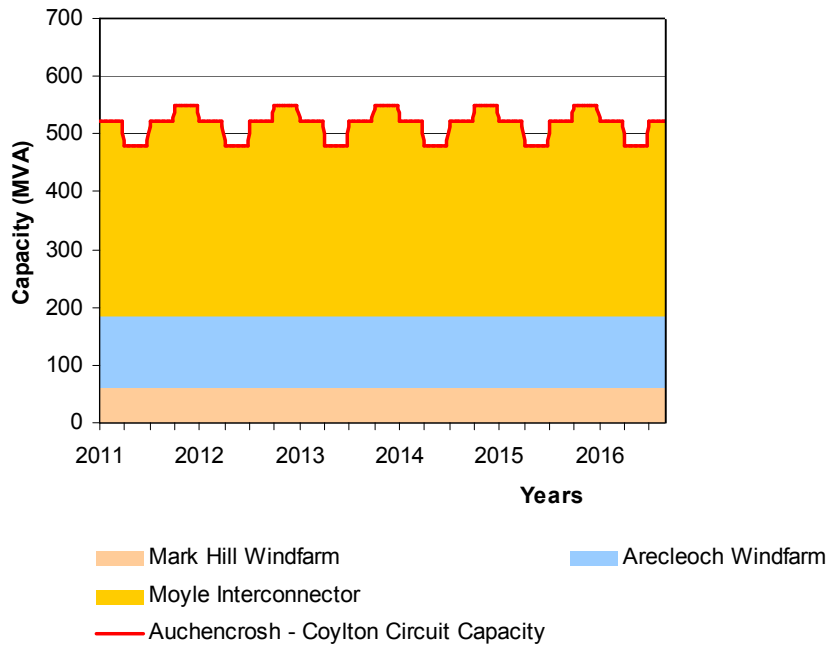
To determine the maximum additional capacity that was available for the Moyle Interconnector, SPT assessed the local circuits on a seasonal basis (i.e. using the individual summer, spring-autumn and winter seasonal ratings). The determining technical factor was the single 275kV circuit between Auchencrosh and Coylton (see diagram 2). The continuous overhead line ratings for this circuit are provided in table 1. Consistent with the requirements of the security standards, in determining the available capacity, SPT assessed background conditions of 0.95pu voltage of the 275kV system pre-fault, with Arecleoch and Mark Hill windfarms on maximum output and with a windfarm power factor of 0.95. The available capacity was established on the basis of the net reactive power transfer from Moyle Interconnector being not in excess of 60MVAR.

Table 1: Auchencrosh – Coylton Overhead line ratings

	Winter (MVA)	Spring/Autumn (MVA)	Summer (MVA)
Post-Fault Continuous	690	655	600
Pre-Fault Continuous	580	550	504
Pre-Fault Continuous (@ Reduced Voltage 0.95pu)	551	523	479

In summary, the assessment determined that, taking account of the contracted generation background, the maximum capacity on the system available to the Moyle Interconnector would be approximately 360MW in winter, 332MW in spring-autumn and 287MW in summer.

Graph 1 – Allocation of Auchencrosh – Coylton Circuit Capacity



Scotland to Northern Ireland Capacity

Historically, the Scotland to Ireland capacity has been restricted to 450MW due to the requirement to meet the voltage step change criteria contained in the security standards. With the Moyle Interconnector exporting power from Scotland to Northern Ireland, the demand in the Kilmarnock South transmission group increases. With high export from Scotland to Northern Ireland and with low generation in the group, a secured event on the wider south-west Scottish network can cause step changes approaching the 12% limit specified in Chapter 6 of the security standards. Even with the connection of additional wind generation in the group, and additional reactive equipment at Moyle, this scenario continues to exist and therefore the technical restriction of 450MW remains.

4. Principles for Assessing Moyle Grid Access Capacity

SONI's primary obligation in this respect is to provide offers for new or modified connections to the All-Island Transmission Networks in Northern Ireland (Licence Condition 25 para. 2). NIE, the Transmission Owner, has a licence obligation (Condition 19 of the NIE's Participate in Transmission License) to plan and develop the transmission network in accordance with the System Security and Planning Standards and the Transmission Interface Agreement (TIA). At this stage SONI believe that MIL are a connectee to the All Island Transmission Network and, as such, have requested a modification to that connection arrangement. The interactions between SONI and NIE for processing a connection application are completed in accordance with the TIA. The TIA has been established so that both SONI and NIE comply with their respective licence obligations (Condition 18 Para 1 of the SONI's Licence).

Based on relevant planning assumptions provided by SONI as required by the TIA, NIE assesses the transmission network's capability to accommodate increased generation or demand in line with the System Security and Planning Standards. Where appropriate, NIE also evaluate the requirement for and cost of any network reinforcements required to accommodate new/modified connections.

In the case of assessing the request for increased transfer limits on the Moyle Interconnector, SONI has diverged from the typical approach which is predicated on non-discrimination between categories of transmission system users. In this instance, SONI has identified the maximum import and export limits at the Ballycronan More connection point under three distinct scenarios:

- Scenario 1** Based on the capacity of the network to facilitate imports or exports on Moyle assuming normal transmission term planning standards.

- Scenario 2** Based on shorter term transfer capacity which may be made available under prescribed operational conditions such as:
 - (i) Constrained output of other existing users; and
 - (ii) Must run generation requirements.

- Scenario 3** The potential for increasing Moyle import/export capacity in the future based on unapproved transmission reinforcements some of which may be indentified in NIE's investment plan.

5. Technical Assessment Undertaken By NIE

The Moyle Interconnector 275kV connection point at Ballycronan More is shown in figure 1. The circuits connecting the 275kV bus into the local network are twin bundled 400mm² ACSR “Zebra” conductors with seasonal thermal ratings:

Winter	881 MVA
Spring/Autumn	820 MVA
Summer	710 MVA

These specific circuits are of sufficient thermal capacity to accommodate the Interconnectors engineering capacity of 500MW import and export via Moyle.

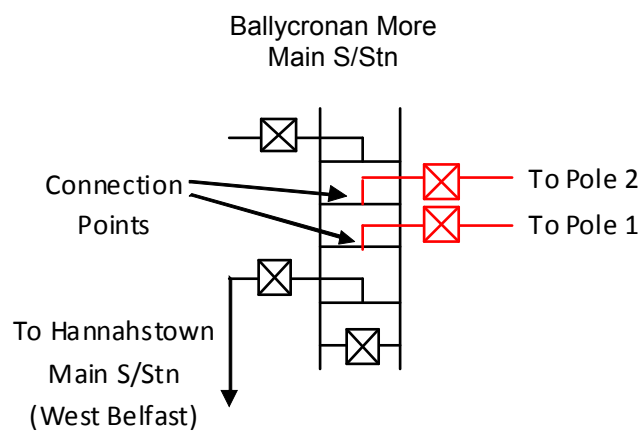


Figure 1: 275kV Connection at Ballycronan More

The local 275kV transmission network is shown in figure 2. This network is entirely constructed on double circuit steel lattice towers. Network load flow studies were completed in keeping with standard practice to assess the impact of single circuit (N – 1), and double circuit tower (N – DC) outage contingencies for winter circuit ratings. The impact of single circuit (N – 1) outages and simultaneous planned and fault outages (N – M – 1) were assessed for summer circuit ratings.

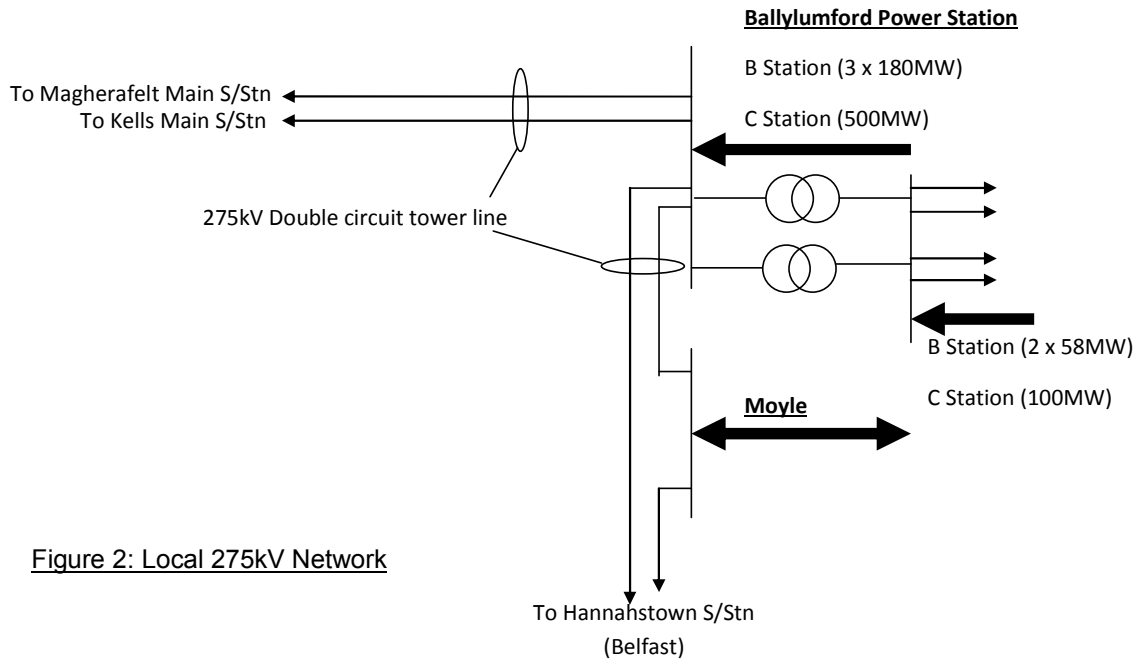


Figure 2: Local 275kV Network

Scotland to Northern Ireland Capacity

Scenario 1

Based on network access commitments to existing users including Moyle interconnector, SONI is already aware that the local network is not capable of accommodating additional import into Northern Ireland. This limit is imposed in summer due to the thermal rating of one double circuit tower line following the loss of the other and in winter due to the size of the largest set, potential 110kV overloads and risk of overload to 110kV circuits. In summary, the limits already identified in the Moyle Interconnector connection agreement cannot be increased under this scenario.

Scenario 2

In order to prioritise an import into Northern Ireland up to the engineering limit of 500MW, other generation connected to that local network may have to be constrained down by 50MW (500MW – 450MW) in winter and 100MW (500MW – 400MW) in summer. By implication, the power flows in the NI transmission system are largely unaffected by managing an enhanced import via Moyle in this manner. The recent load flow studies have confirmed this assertion.

Scenario 3

Significant network reinforcement would be required to facilitate unconstrained connection capacity up to Moyle's engineering limits. These include the following elements:

- Restringing of the 110kV double circuit line between Ballylumford and Carnmoney Main
- Additional reactive compensation in the east of NI

However, the existing connection planning standards would enable an import of 500MW on the understanding that the generation output from Ballylumford could be managed by SONI to mitigate possible network risks.

Northern Ireland to Scotland Capacity

Scenario 1

The most severe network contingency limiting the maximum permissible export is the loss of the double circuit 275kV line from Ballylumford to Ballycronan More and from Ballylumford to Hannahstown. As a result of this outage, the predominant flows to the east of the province (including the greater Belfast area and Moyle) will take less direct routes via the transmission network. The limiting factor is the maintenance of statutory voltage levels in the east of the province and potential ultimate threat of voltage instability.

Scenario 2

At present, a 300MW export can only be securely accommodated under certain dispatch scenarios. SONI can confirm that the pertinent variables are under SONI's control and that the associated risks are manageable. However, under certain circumstances, SONI's actions to facilitate the enhanced Moyle transfer may require the imposition of must run constraints on other market participants. As a result, constraint payments would be due to the affected parties.

Scenario 3

NIE's initial studies show that the installation of additional reactive support at Castlereagh and Tandragee Grid Supply Substations and the upgrade of the Ballylumford-Eden-Carnmoney 110kV corridor would facilitate a 500MW export from Moyle. This increased transfer will be considered in future Transmission Planning assumptions.

6. Operational Practice

Since the introduction of the Single Electricity Market (SEM) in 2007, SONI has ensured that the energy bid into the SEM by Moyle Capacity Holders has been allowed to flow. Under certain scenarios and for system security reasons this has meant that, in day, SONI has curtailed other NI generation including renewable generation. Prior to the curtailment of renewable generation, SONI will investigate the economic viability of an SO – SO trade to effect a reduction in interconnector flow. If this trade cannot be confirmed as firm in sufficient time or it is not economically viable then renewable generation in N Ireland will be curtailed.

7. Future Work and Longer Term Investment – GB Network

Sections 1 to 3 of this document outline the steps that have been followed to calculate the capacity on the GB system available to MIL to the level allowed by the security standards and in keeping with the current market framework for awarding capacity to interconnectors based on a contracted generation background. As such, increasing the level of capacity available to MIL under this existing framework is designed to maximise the transfer capacity between Northern Ireland and Great Britain to take account of the physical capability of the GB system.

However, as a next step, it may be necessary to further consider how capacity can be provided to MIL at a level consistent with the physical capability of the Moyle Interconnector. This will take into account any developments in forecast flows and the need for use of system balancing tools to accommodate them¹⁵.

In the event that the costs of such system balancing are significant, or are forecast to be significant in the future, the efficient solution may be to reinforce the transmission network in south-west Scotland. Processes are already in place, defined by the System Operator to Transmission Owner Code (“STC”), between NGET as system operator and the relevant transmission owner (i.e. SPT) to enable the safe, secure and efficient development of the GB transmission system.

In order for any reinforcement to be justified on a technical and economic basis, it would have to be demonstrated that the cost of the reinforcement would be less than the cost of resolving congestion by system operator balancing over the life of the new assets involved. This would involve a detailed study into likely future demand and generation trends, as well as other planned transmission projects in the All Island market and GB market.

In light of requirements set out in the European 3rd Package legislation relating to cooperation and coordination between TSOs, this work should involve developing a consolidated Eirgrid¹⁶, SONI and NGET view of the requirement to facilitate power transfers between the All Island market and the GB market through a coordinated market study. This shared view will then be consistent with, and supported by, the process (led by ENTSO-E¹⁷) behind the production of bi-annual Ten Year Network Development Plans. The combined study (perhaps developed through the FUI Regional Initiative) could then support the case put forward to regulators (through price control submissions by the relevant transmission owners) to justify network investments.

In GB, if the results of the study suggest that it would be economic to reinforce the Scottish network, updated ‘Planning Assumptions’¹⁸ would be submitted (by NGET as system operator) to SPT as the relevant transmission owner. Assuming that SPT do not choose to dispute the decision to invest, the

¹⁵ It is envisaged that this issue will be reflected in any changes that are made to the GB commercial and regulatory framework in light of the anticipated certification of interconnectors as TSOs under the 3rd European Energy Package.

¹⁶ Eirgrid is the TSO for the Republic of Ireland (as opposed to SONI for Northern Ireland). For more information see <http://www.eirgrid.com/aboutus/>

¹⁷ ENTSO-E is the European Network of Transmission System Operators. For more information see <https://www.entsoe.eu/>

¹⁸ These set out NGET’s forecasts of power flows onto and off the Transmission Owner’s Transmission System under conditions which NGET reasonably foresees will arise in the course of a Financial Year

reinforcement works would be included in their investment plan which ultimately forms part of their price control submission to Ofgem. The next Transmission Price Control, RIIO-T1¹⁹, comes into effect for 8 years from April 2013 and any necessary reinforcements in the Moyle area will be evaluated through this process. In the event that SPT dispute the updated 'Planning Assumptions', the issue can ultimately be referred to Ofgem under the STC.

8. Future Work and Longer Term Investment – NI Network

The transmission deficiencies highlighted in the SONI/NIE connection study identified issues that have already been raised in previous network analysis. SONI is aware that a number of reinforcement options which may also facilitate enhanced export via Moyle are included within the current version of NIE's Transmission Investment Plan (note as part of ongoing TIA processes SONI has a role to play in the development of NIEs Transmission investment plans). These projects may be delivered in the medium term but none are approved at this time.

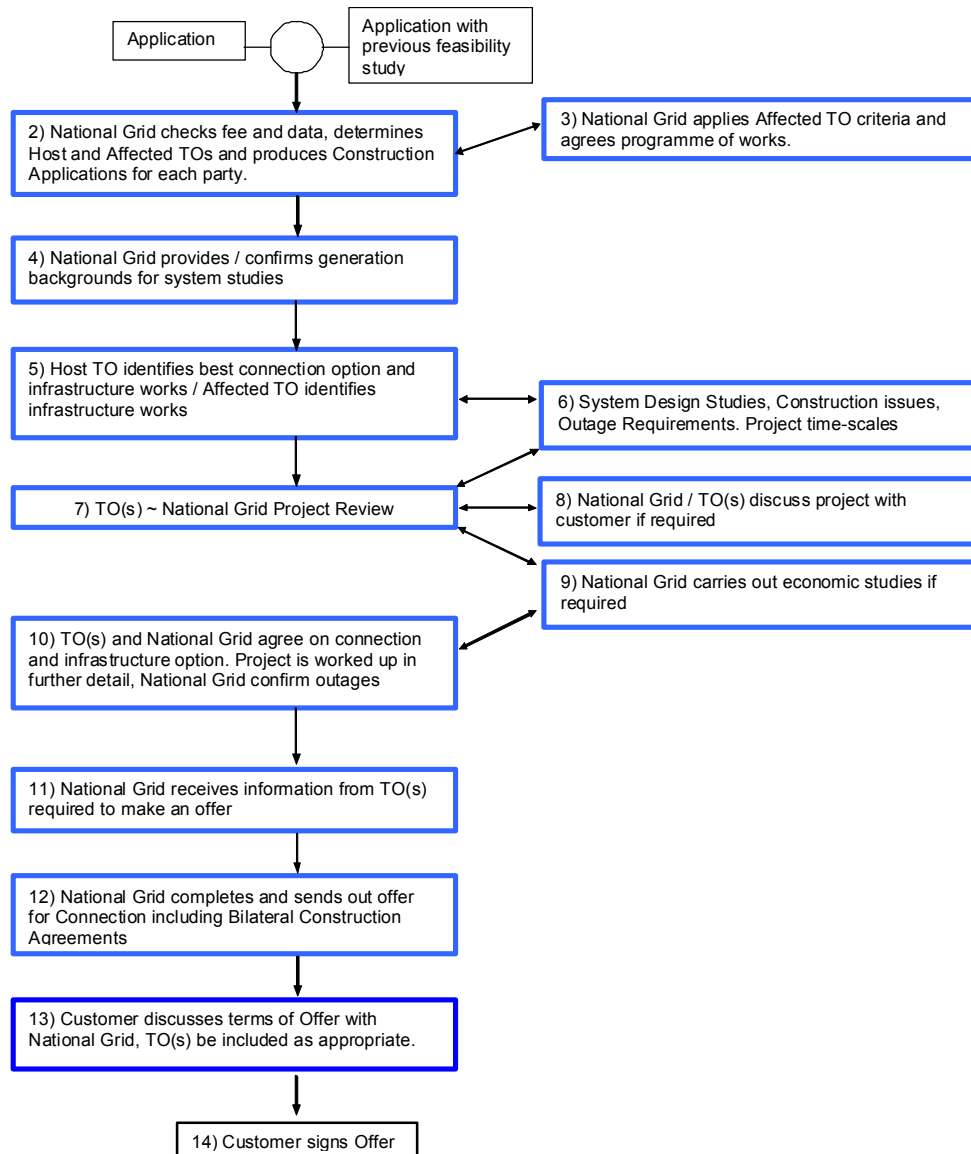
However, when a clear view of the development strategy is agreed and approved, SONI and NIE will investigate the scope for further maximisation of Moyle Interconnector's connection capacity at Ballycronan More. Whilst the planned works may allow increased export capacity beyond that currently available it is very likely that further works will be required to achieve the full 500MW export.

- If the operation of the Moyle Interconnector to a higher level can be justified technically and economically then the additional reinforcement will need to be investigated and funding arranged for NIE with the Utility Regulator. The considerations in NI must take into account NGETs network development proposals and timings in Scotland;
- The completion and operation of the East – West interconnector between RoI and Wales;
- The completion of the tie-line between NI and RoI.

SONI publish an annual Transmission Seven Year Capacity Statement that details existing network capacities and plans that are in place to enhance those capacities. SONI is also a member of the European Network of Transmission System Operators for Electricity (ENTSOE), a group of TSOs established under the European Third Energy Package. The Third Energy Package also envisages increased cooperation between European TSOs to plan and develop their networks. This has already commenced with the publication of the first European 10 Year Network Development Plan. This relationship will facilitate the necessary interactions required between SONI, NGET and EirGrid along with the relevant Transmission Owners to deliver the obligations placed upon them to maximise the capacity available on the Moyle Interconnector.

¹⁹ RIIO stands for 'Revenue = Incentives + Innovation + Outputs' and is the new approach to network regulation developed by Ofgem to replace the 'RPI-X' approach previously used. RIIO-T1 replaces TPCR5 (Transmission Price Control Review 5).

Appendix 1 – NGET Process for Assessing Capacity Modification Requests²⁰



²⁰ This process (STCP18) is part of the System Operator - Transmission Owner Code (STC) which sets out, amongst other things, the formal relationship between SPT as a transmission owner and NGET as system operator.