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# 1 Need

## 1.1 Executive Summary

1. The transmission system in Northern Ireland consists of 275 kV overhead tower lines, 110 kV tower and wood pole lines and 110 kV cables together with substations. The system has three connected fossil fuelled power stations, one directly connected renewable generator and two high capacity interconnectors; i) a High Voltage Direct Current (HVDC) link to Scotland (the Moyle interconnector) and ii) a double circuit tower line to Ireland (Tandragee – Louth circuits). The transmission system provides a connection between the generators, the interconnectors and the distribution system which connects directly to customers. The distribution system also has a large number of directly connected renewable generators including wind farms. The transmission system is operated as part of the all island transmission system to facilitate the Single Electricity Market on the island of Ireland.
2. The existing high capacity interconnector<sup>1</sup> with Ireland is constructed on a single set of towers making the loss of both circuits a credible contingency, which would in turn result in the separation of the Northern Ireland transmission system from the larger Ireland transmission system.
3. With only one high capacity interconnector presently in place, the proposed interconnector is designed to address the following issues:
  - Flows on the existing Tandragee - Louth interconnector have to be restricted to prevent system instability that would otherwise occur following its forced outage.
  - The limit on flows across the existing interconnector imposes costs on the Single Electricity Market which increases the cost of electricity in Northern Ireland and Republic of Ireland.
  - This limitation also affects generation security of supply for Northern Ireland as it limits the scope to rely on Ireland for generation capacity.
  - The penetration of renewable generation in Northern Ireland can at times lead to a system with relatively low inertia<sup>2</sup>, which under a system separation scenario can result in risk of instability.
4. The proposed interconnector will deliver the following benefits for electricity customers:
  - Improved competition - exerting downward pressure on electricity costs by reducing the associated transmission system constraints that are currently restricting the efficient performance of the all-island Single Electricity Market (SEM);
  - Improved security of supply – by providing a second high capacity link between the electricity transmission systems of Northern Ireland and Ireland sharing of generation capacity is enhanced;

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<sup>1</sup> There are also Strabane - Letterkenny and Enniskillen – Corraclassy circuits however these are of relatively low capacity. They are designed to trip automatically in the event of the loss of the existing North – South interconnector.

<sup>2</sup> System inertia is a measure of the system's resistance to rapid change in frequency. Low inertia reduces stability during system disturbances.

- Improved facilitation of renewable power generation – enhancing the flexible exchange of higher power flows and ensuring that the Northern Ireland transmission system is not subject to the severe disturbance associated with a sudden separation from that of Ireland. This will help to ensure that the existing and future renewable generation can be operated safely, securely and efficiently.
5. Once the proposed interconnector is in service, the unrestricted power flows between Ireland and Northern Ireland are predicted to be up to 1100 MW within the first 10 years of service. The existing high capacity interconnector has an overhead line nominal capacity of 1500 MW. Consistent with good industry practice the proposed interconnector is designed with a matched capacity allowing scope for growth.
  6. SONI has responded to third party submissions, which were generally around electricity prices, security of supply and renewables. All letters received, since submission of the Consolidated ES Addendum, regarding the need are addressed in this report. This report also deals with the potential implications of the outcome of the referendum on leaving the EU.
  7. SONI has demonstrated an overriding national and regional need for the Tyrone - Cavan Interconnector.

## 1.2 About the Authors

8. The assessment of the need for the Tyrone – Cavan Interconnector was undertaken by specialists from EirGrid Group and SONI.
9. The first SONI specialist on the need for the proposed interconnector is Mr Mark Norton. Mr Norton is EirGrid Group Manager, Network Planning, responsible for conducting network analysis of the needs and options for developing the transmission network and bringing forward reinforcement proposals including the Tyrone - Cavan Interconnector. He has previously held management roles in Transmission Access Planning and Technology and Standards sections within EirGrid. Prior to joining EirGrid he also held positions in Eastern Electricity in Great Britain. Overall he has 27 years' experience in the planning and design of electricity networks. He holds a Hons. Degree from Anglia Polytechnic University, Cambridge in Engineering and is a member of the Institute of Engineering and Technology.
10. The second SONI specialist on the need for the proposed interconnector is Mr Philip O'Donnell. Mr O'Donnell is the EirGrid Group Manager, Energy Systems Analysis, responsible for conducting market assessment of interconnector projects, demand forecasting, monitoring and reporting on generation security of supply (including the All Island Generation Capacity Statement), economic assessment of transmission projects and assessing the impact of new generation and technologies on the power system. Mr O'Donnell has previously held managerial positions in Power System Operational Planning and Settlement Operation within EirGrid and ESB National Grid. Overall Mr O'Donnell has 33 years' experience in the planning and operation of the transmission system. He holds a BEng from University College Dublin.

11. The third SONI specialist on the need for the proposed interconnector is Mr Raymond Smyth. Mr Smyth currently works in the Network Planning section in SONI. He previously held positions in the Transmission Planning function in Northern Ireland Electricity and transferred with the planning function to SONI in May 2014. He has over 27 years' experience, specialising in transmission, distribution planning and power system protection. He holds an engineering BSc (Hons) degree from the Open University and is a member of the Institute of Engineering and Technology.

### 1.3 Policy and Guidance Informing Assessment

12. This section outlines planning policy documents applicable to consent and also relevant standards and policies applicable to the electricity transmission system industry.

#### 1.3.1 Planning Strategy for Rural Northern Ireland

13. Policy PSU 2 (major projects) and PSU 8 (new infrastructure) requires the applicant to demonstrate overriding national or regional need for the proposal.

#### 1.3.2 Strategic Planning Policy Statement

14. There are two paragraphs within the Strategic Planning Policy Statement (SPPS) considered relevant to the proposed Tyrone – Cavan Interconnector as follows.
15. SPPS paragraph 6.236 states "*The importance of other strategic infrastructure to the region such as ... energy ... is also recognised by Government*".
16. SPPS paragraph 6.239 states "*The aim of the SPPS in relation to telecommunications and other utilities is to facilitate the development of such infrastructure in an efficient and effective manner whilst keeping the environmental impact to a minimum*".

#### 1.3.3 Regional Development Strategy 2035

17. The Regional Development Strategy (RDS) guidance is supportive of the proposed Tyrone - Cavan Interconnector with the following content:
- Improve connectivity to enhance the movement of energy between places (Page 19)
  - One of the aims is to strengthen links between north and south (page 20)
  - Deliver a sustainable and secure energy supply by strengthening the grid (Page 36)
  - Develop a strong North West by improving the energy infrastructure (Page 60)

- To facilitate the provision of additional renewable power generation, primarily from on-shore wind energy, and a need to address current areas of weakness in the grid, it will be necessary to strengthen the electricity grid in many parts of Northern Ireland (Page 85).

#### 1.3.4 Planning Policy Statement PPS21

18. PPS21 sets out planning policies for development in the countryside. Policy CTY1 states that there are a range of other types of non-residential development that may be acceptable in principle in the countryside e.g. certain utilities.

#### 1.3.5 Industry policies and standards

19. Statutory obligations included in the SONI Licence to Participate in the Transmission of Electricity were set out in the Consolidated Environmental Statement (ES) Addendum Section 3.3.
20. The licence includes two conditions that are also relevant and are referenced in this Technical Report as follows.
21. In accordance with its Licence Condition 20, SONI is required to comply with the Transmission System Security and Planning Standards. This includes a key condition that the fault outage of two circuits carried on a single set of structures must not result in widespread loss of supply or a system blackout.
22. SONI is also required, by Licence Condition 35, to produce annually a Generation Capacity Statement. Generation adequacy is assessed statistically in order to meet a standard agreed with the regulatory authorities in both jurisdictions. The Generation Capacity Statement is produced on an all island basis with EirGrid.
23. Parties that connect to or use the transmission system in Northern Ireland, including some generators connected to the distribution system are required to comply with the SONI Grid Code<sup>3</sup>. This includes the conditions, including during disturbances for which distribution connected generators should remain stable.

### 1.4 Summary of documents

24. This technical report summarises, and incorporates by reference, the content of the documents submitted in support of the planning application for the Tyrone – Cavan Interconnector in respect of need. These documents are as follows:

- Chapter 2 of the Consolidated ES (pages 6 - 39)

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<sup>3</sup> <http://www.soni.ltd.uk/Operations/GridCodes/>

- Chapter 3 of the Consolidated ES Addendum (pages 15 - 45);
- Appendix 3.1 of the Consolidated ES Addendum

25. This technical report must therefore be read in conjunction with the Consolidated Environmental Statement and the Consolidated Environmental Statement Addendum, and not as a standalone document.
26. In a general sense all ES documentation is interrelated and, particularly with respect to the interaction of impacts, all the ES documents are relevant. For clarity the documents the author considers to be the key documents are listed above. The reader should form his or her own view on what documents within the ES and its Addenda are relevant, and key, to the topic under consideration.
27. In the interest of readability these documents are not reproduced in full in this technical report.

## 1.5 Introduction to Need

28. The assessment of need for the Tyrone – Cavan Interconnector was presented in Chapter 3 of the Consolidated Environmental Statement (ES) Addendum. The assessment focused on the general policy and the technical drivers for the Tyrone – Cavan Interconnector, namely improving competition within the Single Electricity Market (SEM), the need for better sharing of generation capacity to ensure security of supply and facilitation of renewables.
29. The Consolidated ES Addendum section 3.3.2 included a geo-schematic of the transmission systems in Ireland and Northern Ireland. The transmission systems in Northern Ireland and Ireland were explained along with the background into the need to access the cheapest generation sources, the integration of renewables and the development of interconnectors between Ireland, Northern Ireland and Great Britain to date.
30. The Consolidated ES Addendum section 3.3.2.5 explained the limitations of the existing interconnection between Ireland and Northern Ireland. In particular it explained that the existing high capacity interconnector is constructed on a single set of towers making the loss of both circuits a credible contingency, which would in turn result in the separation of the Northern Ireland transmission system from the larger Ireland transmission system. The proposed interconnector would provide a second circuit which would prevent system separation.
31. The proposed interconnector is an infrastructure development of long term strategic importance for Northern Ireland, and will deliver the following benefits for electricity customers:
- Improved competition - exerting downward pressure on electricity prices by reducing transmission system constraints that are currently restricting the efficient performance of the all-island Single Electricity Market (SEM);

- Improved security of supply – by providing a second high capacity link between the electricity transmission systems of Northern Ireland and the Ireland, thus allowing improved sharing of generation capacity and;
  - Improved facilitation of renewable generation – enhancing the flexible exchange of higher power flows and ensuring that the Northern Ireland transmission system is not subject to the severe disturbance associated with a sudden separation from that of Ireland. This will help to ensure that the existing and future renewable generation can be operated safely, securely and efficiently.
32. The proposed interconnector is supported by both the Northern Ireland and Ireland Governments. Successive Ministers within the Department for Economy (formerly the Department of Enterprise, Trade and Investment) have strongly championed the proposal as a strategic priority and it is clearly in line with current Northern Ireland energy policy. The proposed interconnector is also backed by key stakeholders in the energy markets including the Utility Regulator, energy providers, manufacturing firms and consumer groups. Business organisations as well as individual businesses are on record in support of the proposed Tyrone – Cavan Interconnector.
33. The proposed interconnector is consistent with European Union (EU) Directives that require enhanced electricity interconnection between EU member states and improved conditions for energy competition throughout Europe. The project is designated a project of common interest (PCI)<sup>4</sup>.
34. The following are key elements of the “*case of need*” for the proposed interconnector. The demonstration of need, which is summarised below and more fully set out within the Consolidated ES Addendum, is required by Policies PSU2 and PSU8 of the Planning Strategy for Rural Northern Ireland.

## 1.6 Limitations of the Existing Interconnector

35. Section 3.3.2.5 of the Consolidated ES Addendum set out the limitations of the existing high capacity interconnector between Ireland and Northern Ireland. It was explained that this Tandragee – Louth high capacity interconnector is based on a double circuit tower line and that there is a credible risk that a single fault could result in the forced outage of both circuits at the same time.
36. The fault outage of both circuits of a double circuit tower line is recognised as a credible contingency within the industry in Northern Ireland and Ireland. This is confirmed in the Transmission System Security and Planning Standards (TSSPS)<sup>5</sup> sections 2.9.2, 4.6.2 and 4.9.2 as approved by the Utility Regulator. There is clear justification for this as there have been repeated instances of the loss of double circuit tower lines in Northern Ireland.

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<sup>4</sup>The proposed interconnector has been designated a PCI for the purposes of EU Regulation 347/2013. A key aim of this regulation is to ensure that strategic priority energy networks in the public interest in Europe are completed by 2020. The proposed interconnector is listed in Commission Delegated Regulations (EU) 2016/89, in line with requirements in EU Regulation 347/2013 to establish an updated list of projects of common interest every 2 years.

<sup>5</sup> <http://www.soni.ltd.uk/media/documents/Projects/Publications/NorthernIrelandTSSPSSeptember2015.pdf>

37. Section 3.3.2.5 of the Consolidated ES Addendum explained that the loss of the existing Tandragee – Louth high capacity interconnector would result in the electrical separation of the transmission system in Northern Ireland from that in Ireland<sup>6</sup>. The separation would cause an imbalance between the levels of generation and demand on both parts of the island in that the importing system will experience a deficit in available generation while the exporting system will have a surplus. If the imbalance exceeds a certain limit then it can lead to instability particularly in the importing system resulting in the cascading loss of generation and the potential collapse and total blackout of that system.
38. Section 3.3.2.5 of the Consolidated ES Addendum confirmed that the transmission system operators have to restrict the flow on the existing Tandragee – Louth high capacity interconnector to no more than 450 MW. In addition there is also a margin reserved for emergency response between the two systems. In practice the normal power flow is limited to approximately 300 MW.
39. The risk of system separation and the consequential restriction in flow:
- a. prevents the efficient operation of the existing single electricity market (and the forthcoming I-SEM),
  - b. restricts the extent to which generation in one jurisdiction can contribute to the security of generation supply in the other jurisdiction and;
  - c. will act as an impediment to the safe, secure and efficient operation of renewable generation.

## 1.7 Key Requirements for Additional Interconnection

40. In order to ensure that the constraints described above are removed and to maximise the potential for the investment, the proposed interconnector has been designed to deliver at least the same maximum power transfer capacity as the existing Tandragee - Louth interconnector - and to do so with a high level of security and reliability.
41. In February 2006, the applicant and EirGrid presented a paper to their respective regulatory authorities (NIAUR and the Commission for Energy Regulation, CER) recommending an interconnector to meet the need for removing critical market constraints and ultimately designed for a nominal 1,500 MW capacity.
42. Since the 2006 proposal, the required capacity of the proposed interconnector has been kept under review. Most recently, predicted flows for the years 2020 and 2030 were considered in the report entitled "*The Need for a Second North South Electricity Interconnector*" attached at Appendix 3.1 of the Consolidated ES Addendum. The flows representing the first ten years of service of the proposed interconnector have indicated a need for a capacity of at least 1,100 MW between Ireland and Northern Ireland. In the instance of the loss of the Tandragee – Louth interconnector this entire flow would be on the proposed interconnector. Therefore within its first ten years of service it is forecast to secure the

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<sup>6</sup> There are also Strabane - Letterkenny and Enniskillen – Corraclassy circuits however these are of relatively low capacity. They are designed to trip automatically in the event of the loss of the existing North – South interconnector.

transfer of almost 75% of its capacity. In comparison to similar planned interconnectors in the 2014 Ten Year Network Development Plan<sup>7</sup>, all have been designed with additional nominal capacity. This provides capacity for the future development of the system. Compared with these other interconnectors, this interconnector would have the highest immediate utilisation of its nominal capacity. As a result the choice of nominal capacity, i.e. 1500 MW, matched to the nominal capacity of the Tandragee – Louth interconnector and other double circuits in Northern Ireland, is in line with good industry practice.

43. The proposed Tyrone - Cavan Interconnector also needs to be physically separated from the existing Tandragee - Louth interconnector, so that the risk of concurrent failure due to common events, for example adverse weather conditions, will be as low as possible. Operating the transmission system with both high capacity interconnectors in service will provide enhanced security of supply in the event of the failure of either interconnector, because the interconnector which remains in service during the failure of the other interconnector can instantaneously accept the additional power flow so that there is no resulting instability in system behaviour or loss of supply to customers.
44. The proposed Tyrone - Cavan Interconnector is required to form part of a transmission system that, although formed from two separately owned transmission systems within two separate jurisdictions, will be operated as an integrated all-island transmission system. In order to minimise future constraints, the proposed Interconnector must operate with similar performance as other transmission lines within the transmission system as a whole.

## 1.8 Benefits of Tyrone – Cavan Interconnector

### 1.8.1 Competition and Electricity Prices

45. The Consolidated ES Addendum Section 3.3.3 described the benefits of the proposed interconnector in terms of competition within the market. The section also described the transition of the electricity sectors in Ireland and Northern Ireland that culminated in the establishment of the Single Electricity Market in 2007. This enabled generators and suppliers to compete across the island of Ireland. The section described how the limitations caused by the single interconnector were not allowing the SEM to be as efficient as it could be.
46. The cost of electricity is of increasing concern to everyone in Northern Ireland, both for domestic and business customers. The cost of electricity also has consequences for competitiveness and economic growth in Northern Ireland. For this reason it is very important that electricity prices are kept as low as possible. Being part of the SEM and the forthcoming I-SEM brings to the greatest extent possible a competitive market that Northern Ireland customers benefit from.

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<sup>7</sup> [https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Documents/TYNDP%202014\\_FINAL.pdf](https://www.entsoe.eu/major-projects/ten-year-network-development-plan/tyndp-2014/Documents/TYNDP%202014_FINAL.pdf)

47. The Consolidated ES Addendum explained that the limitation on flows on the existing Tandragee - Louth interconnector means that the all island operation of generation is not least cost. This means that the cheapest generators are not optimally used at all times and that more expensive generators need to be used, pushing up the cost of electricity for everyone. Market assessments estimate that, on an all-island basis, the total benefit from the reduction in the cost of producing power are of the order of €20m per annum from 2020, increasing to between €40m and €60m per annum from 2030 onwards, exerting downward pressure on electricity costs.
48. The energy regulators and government departments in both Northern Ireland and Ireland have explicitly identified the need for a second North-South interconnector as a “*key enabler*” for the future effectiveness of the SEM.
49. For further information on the need for and benefits of the second interconnector in terms of competition within the Single Electricity Market see Appendix 3.1 to the Consolidated ES Addendum.

### 1.8.2 Energy Security

50. The Consolidated ES Addendum Section 3.3.3 also explained the benefits of the Tyrone – Cavan Interconnector in terms of generation security of supply.
51. The Consolidated ES Addendum described how SONI was required to intervene and establish the contract with AES Ballylumford for the provision of 250 MW of local reserve services for a three-year time period commencing 1st January 2016, with an option to extend for a further 2 years. This contract is most recently estimated to cost the Northern Ireland customers an additional £8.9m per annum for the first three years<sup>8</sup>. It is important to state however this contract could not be extended beyond 2020 due to its fixed term. In the event of a need to establish a new contract this would be subject to competitive tender.
52. The level of generation security in Northern Ireland, Ireland and all-island is monitored jointly by SONI and EirGrid and reported annually in the All-Island Generation Capacity Statement. The All-Island Generation Capacity Statement 2016-2025 is updated with the latest information on generation capacity on the island, however it indicates that generation in NI will be in deficit beyond 2020. Recently the Moyle Interconnector has returned to full service following an extended period where its capacity was limited to 50% due to a cable fault. Shortfalls in available sources of electricity supply would require the introduction of arrangements to prevent power system instability by switching off the electricity supply to customers (using a rota system for selected areas) during times of peak electricity demand. This outcome is not acceptable, and underlines the increasingly critical nature of the need for additional interconnection as a matter of urgency.

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<sup>8</sup> See <http://www.uregni.gov.uk/uploads/publications/DETI - Utility Regulator - Updated Security of Supply Paper - 22 Dec 14 draft 2.pdf>

53. The risk of loss of supply is highly relevant in the context of industrial and commercial investment decisions, and a secure energy environment will ensure the best possible economic advantage for everyone in Northern Ireland.
54. SONI continues to assess the connection of new generation and is not aware of any committed large scale generation projects in Northern Ireland which will make a significant contribution to security of supply.
55. The All Island Generation Capacity Statement 2016-2025 indicates a surplus in generation capacity in Ireland over the ten year period. With the proposed interconnector customers would be able to fully access this surplus capacity ensuring security of supply for the foreseeable future.

### 1.8.3 Supporting the Development of Renewable Energy

56. The Consolidated ES Addendum Section 3.3.3 also explained the benefits of the Tyrone – Cavan Interconnector in terms of facilitation of renewables.
57. As of September 2016 there was approximately 682 MW of large scale connected renewable generation (i.e. individually greater than 5MW) in Northern Ireland. There were also accepted offers for the connection of a further 562 MW, leading to a total of 1244 MW either connected or committed<sup>9</sup>. It is estimated that an installed wind capacity of circa 1250 MW, along with other renewables such as small scale wind, solar, photo-voltaic and biomass will be enough to reach 40% consumption from renewables generation by 2020 provided it can be operated in a safe, secure and efficient manner.
58. The Consolidated ES Addendum explained that the Tyrone – Cavan Interconnector is necessary to ensure that system characteristics such as inertia are securely shared across the island. Expanding on this it is important to explain that a high penetration of renewables tends to make the transmission system less resilient during disturbances such as faults. The most significant disturbance to the Northern Ireland transmission system is the loss of the Tandragee – Louth Interconnector and the resulting separation from the larger transmission system of Ireland.
59. The integration of renewables therefore presents challenges in being managed on the power system. By displacing conventional generation the overall system stability tends to reduce, in particular during high wind periods. This has presented challenges in general on the all island system which is being considered by the EirGrid Group DS3<sup>10</sup> programme.
60. With increasing renewable generation on the power system there is a growing risk that following events such as the loss of the current north south interconnector, the system will become unstable.

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<sup>9</sup> Source NIE Networks

<sup>10</sup> The aim of the EirGrid DS3 Programme "Delivering a Secure, Sustainable Electricity System" is to meet the challenges of operating the electricity system in a secure manner while achieving the 2020 renewable electricity targets.

61. A report<sup>11</sup> summarising a set of studies carried out in 2012 indicated that with high levels of renewable generation<sup>12</sup> a system separation event could lead to rapid changes in frequency. A TSO report by KEMA<sup>13</sup> in February 2013 found that such changes in frequency could lead to a higher risk of generator instability. A system separation event could therefore be followed by the loss of a large proportion of embedded renewable generation with a further risk of a total collapse and blackout of the Northern Ireland electricity system.
62. Whilst the risk is currently being managed at increased cost through operational policy and practice, this will not be sustainable for the safe, secure and efficient operation of the renewables that are expected to connect by 2020. The proposed interconnector prevents the risk of system separation and ensures that the specific stability problem in Northern Ireland is avoided into the future.
63. Therefore to continue to accommodate increasing levels of renewable generation without the need for excessive constraint and increased cost, it is clear that the Tyrone – Cavan Interconnector is required.

## 1.9 Licence and Regulatory Context

64. The Electricity (Northern Ireland) Order 1992 sets out the basic licensing regime for carrying out electricity related business activities in Northern Ireland. It places a statutory duty on the licence holders to plan, develop and maintain an efficient, co-ordinated and economical system of electricity transmission which has the long-term ability to meet reasonable demands for the transmission of electricity.
65. In 2007 the Single Electricity Market was established on the island of Ireland.
66. The Department for Economy (DfE) is the Government department responsible for energy policy in Northern Ireland. It also has a primary role in government, in ensuring the provision of the energy infrastructure that is needed for Northern Ireland's economy.
67. The Utility Regulator is responsible to Government for regulating the ongoing operation of licence holders and for protecting the long term interests of customers. The Utility Regulator is, amongst other things, specifically required to promote effective competition between persons engaged in the sale or purchase of electricity through the SEM.
68. SONI is the licence holder responsible for transmission planning in Northern Ireland, that responsibility having transferred from Northern Ireland Electricity in April 2014. The responsibility to progress the proposed Tyrone – Cavan Interconnector project also transferred as a result.
69. SONI's licence Condition 24 requires it to "*facilitate the planning, development, maintenance and operation of the transmission system as part of efficient, economical, co-ordinated, safe, secure and reliable All-*

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<sup>11</sup> <http://www.eirgridgroup.com/site-files/library/EirGrid/Summary-of-Studies-on-Rate-of-Change-of-Frequency-events-on-the-All-Island-System.pdf>

<sup>12</sup> Even with the current level of renewables at 25% of installed generation, there are some occasions when in excess of 50% of the total electricity being generated in Northern Ireland is sourced from renewables.

<sup>13</sup> [http://www.eirgridgroup.com/site-files/library/EirGrid/DNV-KEMA\\_Report\\_RoCoF\\_20130208final\\_.pdf](http://www.eirgridgroup.com/site-files/library/EirGrid/DNV-KEMA_Report_RoCoF_20130208final_.pdf)

*Island Transmission Networks.*” It also requires the company to contribute to security of supply through adequate transmission capacity and system reliability, and to facilitate competition in the supply and generation of electricity.

70. The proposed Interconnector is consistent with the legal and regulatory obligations required of SONI by DfE and by the Utility Regulator.

## 1.10 Response to Third Party and Statutory Consultee Submissions

71. Between 2009 and 2012, there were approximately 6,000 third party submissions made in relation to the proposed Tyrone - Cavan Interconnector. These were reviewed and taken into account in the writing of the Consolidated ES. Following the publication of that document in 2013 and between May 2013 to May 2015, 2,957 third party submissions were made - of which approximately 136 related to the need for the Tyrone – Cavan Interconnector. All submissions that were made have been taken into account in the writing of the Consolidated ES Addendum.
72. Between June 2015 and November 2016, there have been approximately 594 third party submissions, 42 of which made reference to the need for the project. These are addressed as follows.
73. Submission letter 2960 stated that the proposed interconnector cannot ensure energy supply or competitively priced energy. The submission went on to state that the proposed interconnector is mainly required to support the renewable levels above 25% penetration and that the DETI discussion paper “*CFD Implementation in NI – Strategic issues*” had stated that this would have a negative effect on the economy. In response the Consolidated ES Addendum stated three drivers for the Tyrone – Cavan Interconnector, namely improved competition within the SEM, sharing of generation capacity and renewables. The overall benefits were estimated at €20m per annum by 2020 increasing to between €40m and €60m per annum from 2030 onwards which will exert downward pressure on electricity costs in Ireland and Northern Ireland. The potential shortfall in generation capacity in Northern Ireland has been explained with reference to the previous and the current Generation Capacity Statement, and also how the Tyrone – Cavan Interconnector allows secure access to the surplus capacity that exists in Ireland. Furthermore, the existing temporary contract with AES to provide local reserve has been referenced. In the long term the benefit is that capacity can be shared across the island. In terms of renewables SONI estimates that there is sufficient renewable generation committed to connect to deliver the 40% target, provided it can be operated in a safe, secure and efficient manner. To prevent the system stability issues arising from the separation of the Northern Ireland transmission system from the Ireland transmission system that would be compounded by 40% renewables SONI considers the proposed interconnector will be required to allow the target to be achieved.
74. Submission letter number 2962 stated that SONI has not given a commitment that electricity prices will not rise due to the Tyrone – Cavan Interconnector and that the project would be of more benefit to urban areas

rather than rural areas. The submission also states that, based on predicted consumption rates, the development may not lead to a net reduction in carbon emissions resulting from renewables but rather an increased reliance on fossil fuels. In response, the proposed interconnector will exert downward pressure on electricity prices. As stated in the Consolidated ES Addendum, there will be savings from production costs and security of supply. In respect of reduced production costs, these were estimated all island at €20m per annum in 2020 rising to €40m per annum in 2030. In part these reduced production costs are as a result of making better use of renewable energy. This cost can be split pro-rata between the jurisdictions, based on energy consumed, with approximately 25% to Northern Ireland customers and 75% to Ireland customers. In respect of the security of supply costs, in the short term, prior to the commissioning of the proposed interconnector customers in Northern Ireland are directly bearing a cost of approximately £8.9m per annum to ensure their security of supply. It is estimated that the all island security of supply benefit will grow to approximately €19m per annum by 2030. In the absence of the proposed interconnector, Northern Ireland customers will continue to fund increased security of supply costs.

75. Submission letter number 2966 queried the need for the proposed interconnector from an EU policy perspective, a need for an SEA and that in terms of security of supply other alternatives including energy efficiency, energy storage and the ISLES project should be investigated. In regards to the query on the SEA, SONI would refer to our submission to the First Stage of the Public Local Inquiry. In response to the other queries, including ISLES, SONI would refer to the Consolidated ES, the Consolidated ES Addendum and the latest Generator Capacity Statement where these have been considered. The Generator Capacity Statement does consider the extensive energy efficiency measures that are already being implemented and any committed energy storage projects, and still predicts a shortfall in generation capacity in Northern Ireland from 2020.
76. Thirty five letters<sup>14</sup> stated that the need was understood to be to act as a back up to our power stations but that the proposal was a temporary solution that failed to address the underlying problems. In response SONI would contend that the Tyrone – Cavan Interconnector is clearly not a temporary solution but rather one that addresses the underlying problem of the lack of secure interconnection between the transmission systems of Ireland and Northern Ireland. This provides long term benefit to all customers on the island of Ireland. As stated in the Consolidated ES Addendum the proposal provides benefits on three fronts, improving competition within the SEM, enhancing security of supply and, by removing the risk of system separation, contributing towards the facilitation of renewables.
77. Submission letter 2983 stated that SONI had not provided a good reason for the Tyrone – Cavan Interconnector and referred to visual, safety and environmental impacts. In regard to the reasons for the Tyrone – Cavan Interconnector, SONI would contend that it has provided extensive reasons as detailed in the Consolidated ES Addendum, Chapter 3.

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<sup>14</sup> 2969, 2974, 2975, 2977, 2981, 3020-3028, 3030-3038, 3040-3051

78. Submission letter 3194 stated that the need was for telecommunication equipment. SONI would refer to the need as outlined in the Consolidated ES Addendum Chapter 3 being competition within the SEM, security of supply and facilitation of renewables.
79. Submission letter 3199 queried the timeliness of the proposal. SONI would contend that the Tyrone – Cavan Interconnector is required urgently to exert downward pressure on electricity costs, enhance security of supply and facilitation of renewables. It is required urgently because a) excessive costs are being incurred by customers, b) the fixed term contract with AES Ballylumford must expire in 2020, after which there will be a shortfall in capacity and c) will be required to ensure the renewable generation can be operated safely, securely and efficiently.
80. Submission letter 3527 queried the need for the proposal given the level of industrial development. SONI would refer to the need as outlined in the Consolidated ES Addendum Chapter 3 which took account of the most recent forecasts.

### 1.11 Events since the Addendum

81. Following a referendum held in June 2016, in which a majority voted in favour of leaving the EU, the UK government has stated it will invoke Article 50 of the Treaty on European Union by the end of March 2017. This puts the UK on a course to leave the EU by the end of March 2019.
82. The implications are relevant to this application in the sense that the SEM and the I-SEM are designed according to EU Directives through existing membership of the Internal Energy Market. The negotiations between the UK and the EU will have to determine the extent of the relationship with the Internal Energy Market. This will include negotiations with Ireland, as a continuing member of the EU into the arrangements that will be put in place post the UK exit.
83. There is however clear evidence to confirm that there is every intention to continue with the SEM and I-SEM. In their letter of 10th August 2016 to the Prime Minister, the Northern Ireland First Minister and Deputy First Minister stated: *“energy is a key priority, given that there are inherent cost and supply issues in a small, isolated market so we will need to ensure that nothing in the negotiation process undermines this vital aspect of our economy.”*
84. In the response letter of 14th October 2016 the Prime Minister stated: *“I also recognise the unique issues raised by the single electricity market and the supply of gas to Northern Ireland, and resolving these will be a priority for the Government. We are committed to working with you, with the Irish Government and with the EU to make sure that Northern Ireland continues to have access to an affordable, secure and sustainable supply of energy for business and domestic use.”*
85. Further, the Utility Regulator has also stated in a letter to Northern Ireland Affairs Committee of MPs *“In principle there is no reason why wholesale electricity flows between Republic of Ireland and Northern*

*Ireland or between either part of the island and the UK mainland should be affected by Brexit." The letter continued: "In the case of a UK decision to leave the EU, and the potential lengthy negotiations that would ensue (some commentators have said that this may take up to two years), it is unlikely that this would significantly impact on the programme to implement the I-SEM (Single Energy Market) by 2017."*

86. The SEM and forthcoming I-SEM bring benefits for Northern Ireland customers by being part of a larger and more competitive and efficient electricity market. Efficient trade between electricity markets works on the principle of power flowing from the cheaper market to the more expensive market. This has the effect of reducing prices in the more expensive market. At present, on average, the generators that produce electricity in Northern Ireland are more expensive than those in Ireland. Without significant investment in new generation in Northern Ireland this will continue to be the case for the foreseeable future.
87. In the unlikely event that a separate electricity market is established in Northern Ireland, the proposed interconnector would still allow similar benefits through increased energy and capacity trading in a bi-lateral arrangement between those markets as Northern Ireland would be able to purchase cheaper electricity from Ireland. It is worthwhile noting that the existing Tandragee - Louth interconnector was planned and built when Northern Ireland and Ireland had separate electricity markets and has brought about many benefits during the time it has been in service both as part of the SEM and when separate markets existed.
88. Finally, the safe, secure and efficient facilitation of renewables can only be enabled by ensuring the transmission systems in Ireland and Northern Ireland are securely interconnected so that the disturbance associated with system separation is avoided. The Tyrone – Cavan Interconnector is required to ensure that the two transmissions can do this even during a fault. This would be required even in the event of separate markets being established.

## 1.12 Conclusions

89. The existing level of interconnection is inadequate in terms of the efficient operation of the SEM, the sharing of generation capacity and increased renewables.
90. The proposed interconnector is an infrastructure development of long term strategic importance for Northern Ireland, and will deliver the following benefits for electricity customers:
- Improved competition - exerting downward pressure on electricity prices by reducing transmission system constraints that are currently restricting the efficient performance of the all-island Single Electricity Market (SEM);
  - Improved security of supply – by providing a second high capacity link between the electricity transmission systems of Northern Ireland and the Ireland, thus allowing improved sharing of generation capacity and;
  - Improved facilitation of renewable generation – enhancing the flexible exchange of higher power flows and ensuring that the Northern Ireland transmission system is not subject to the severe disturbance

associated with a sudden separation from that of Ireland. This will help to ensure that the existing and future renewable generation can be operated safely, securely and efficiently.

91. The proposed Interconnector is required to have a nominal capacity of 1500 MW.

92. There remains a clear and immediate strategic need for the proposed interconnector. In the context of planning policy this is a project of overriding national and regional need.