

**Market Consultation for Physical Reverse Flows on South-North
Pipeline**

16th April, 2012

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Introduction

The EU Gas Security of Supply Regulation (EU) No 994/2010 (hereinafter referred to as “the Regulation” requires that TSOs shall enable permanent bi-directional capacity on all cross-border interconnections between Member States by 3rd December, 2013 unless an exemption has been granted. This security of supply assessment paper will focus on the South-North Pipeline (SNP) Interconnection Point, which is currently uni-directional as it can support flows from Republic of Ireland (ROI) to Northern Ireland (NI). The purpose of this paper is to determine the market requirement for reverse flow from Northern Ireland to interconnector 2 (IC2) and possibly into the RoI network depending on infrastructure developments.¹

The TSOs in Northern Ireland have participated in the development of the CAG Project for some time and under the proposed CAG regime, the SNP would not be considered to be covered by Regulation 994. On the 3rd February 2012, notification was issued by the NI regulator (UREG) referring to the uncertainty of the CAG programme and advising that the provisions of 994 should now be considered as applying to the SNP. At a follow on meeting of the UK/All Ireland Emergency and Security of Gas Supply Group on the 23rd February, 2012 and in subsequent correspondence, DECC (as Competent Authority) requested BGE(UK) to submit a proposal to enable reverse flow, or exemption from this requirement, by the Regulation deadline of 3 March, 2012. BGE(UK) submitted a request for an exemption from this requirement on 2nd March, 2012.

Given the limited time available, DECC in agreement of an approach with both DETI and the Utility Regulator, have confirmed that the Competent Authority would be satisfied for the assessment of market demand and security of supply benefits to be based on existing literature, and BGE(UK)’s expert knowledge of the market. Following the 3 March deadline, the

¹ It should also be noted that arrangements are currently being developed to facilitate gas transportation from Moffat via IC2 into Northern Ireland and it is anticipated that these will be in place in Q3 2012.

These arrangements will provide obvious security of supply benefits for Northern Ireland in that additional capacity for gas transportation from Moffat to NI will be available and will avoid the use of non standard congestion management arrangements in NI.

Regulation envisages a period of a further 4 months discussion between Competent Authorities, DECC and the Commission for Energy Regulation (CER) in the south.

In accordance with the above clarifications the two TSOs on the South North Pipeline submitted a request for an exemption under Article 7 1(b) of EC 994 based on an initial market assessment as required by EC 994 7 2. This initial assessment of market demand for bi-directional capacity was carried out within the limited time available. The TSOs recommended that a full market test by way of consultation with industry participants be carried out, and both TSOs are now facilitating this market test in consultation with Industry.

The Regulation envisages future risk assessments (every 2 years) to take account of the need for physical reverse flow at Interconnection Points.

This document will investigate the supply and demand scenarios of both Northern Ireland and the Republic of Ireland; highlight the potential costs of implementing physical reverse flow at the South-North Interconnection Point, before detailing any potential benefit to either jurisdiction through the implementation of physical reverse flow taking into account the infrastructure standard outlined in Article 6(1) of the Regulation.

The analysis contained within this document has been drawn from the Regulator's 2011 Joint Gas Capacity Statement and contains a five year supply / demand forecast for the island of Ireland. The TSOs have only assessed potential capacity commitments commencing prior to 1st October 2016. The Security of Supply Regulation requires that the Competent Authorities carry out a risk assessment on a biennial basis. The Competent Authorities are the CER for Ireland and DECC for Northern Ireland.

BGE(UK) and Gaslink are carrying out a market assessment for bi-directional capacity at the South North Interconnection Point at the request of DETI.

The initial stage of the market test takes the form of this consultation paper which has been jointly produced by BGE(UK) and Gaslink (hereinafter referred to as the TSOs).

Market Assessment and Analysis of Supply and Demand

The TSOs have not received any formal requests from market participants requesting physical reverse flow on the South-North pipeline prior to October, 2016. They have however received indications from the market during the preparation of the Joint Gas Capacity Statement JGCS 2011 that physical reverse flow on the South-North pipeline may be required for Gas Year 2016/17 or later.

The majority of the gas demand in the Republic of Ireland and all of the gas demand in Northern Ireland are currently supplied with gas imported from Great Britain through Moffat, with the remainder being supplied from Inch with Kinsale production and storage gas.

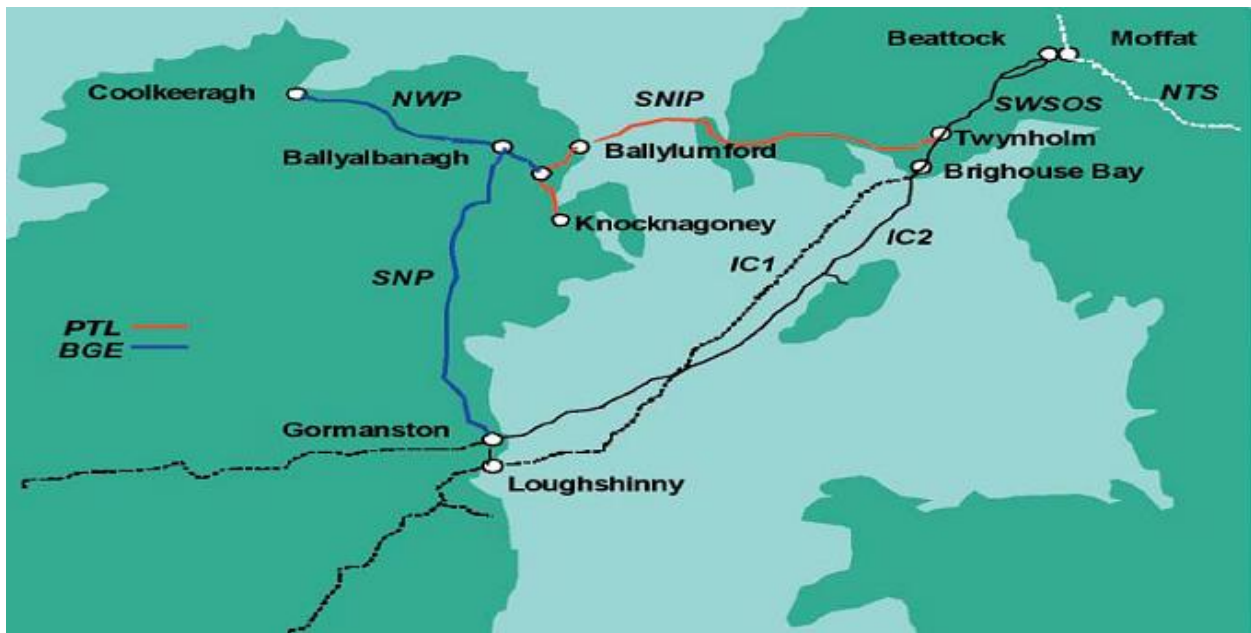


Figure 1: Pipelines from Northern Ireland to the Republic of Ireland

Invitation to Declare Interest

The purpose of this Consultation paper is to enquire of the market as to whether there is sufficient interest in undertaking the necessary investments to enable gas to flow physically from Northern Ireland to the Republic of Ireland prior to October, 2016. Shippers are invited to indicate whether or not they have such interest by completing the questionnaire attached at Appendix A.

Shippers are asked to specify, any interest they may have by indicating, when they would like to have reverse flow capacity from, the volume, price and duration to which they would be prepared to financially commit. Companies that express an interest in physical reverse flow will be contacted for further discussion about the commitment they are prepared to give, and the options available to give this investment signal. Feedback from interested parties regarding how this process could be improved in the future is also welcome.

Companies are invited to return the completed questionnaire by Monday, 7th May, 2012 to:

Celine Hayes,
Market Arrangements,
Gaslink,
Gasworks Road,
Cork,
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chayes@gaslink.ie

Donal Kissane.
BGE(NI),
Bord Gáis Networks,
Gasworks Rd,
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Ireland
dkissane@bge.ie

If you require any additional information in relation to this document please contact:
Celine Hayes (+353 (0) 21 5006116) or Donal Kissane (+353 (0) 21 4534294).

Process

This consultation will be open until 7th May, 2012, however, given the timescales and the level of work involved in converting an expression of interest into binding commitments, TSOs would request that should any market participants be genuinely considering applying for reverse flow capacity they contact the TSOs as soon as practicable in order to discuss potential requirements at the earliest possible stage. It is anticipated that any binding agreements will be entered into by market participants, with the relevant TSOs, using the existing processes pertinent to each TSO, this will be completed as soon as reasonably practicable following the initial expression of interest but can be expected to take a number of months.

Following the assessment of the market by the TSOs, if market demand is deemed to be sufficient, the TSOs will submit a proposal for Physical Reverse Flow to DETI and the CER. If market demand is deemed to be insufficient, the TSOs will submit market information to the Regulators to support the request for exemption from Physical Reverse Flow in accordance with Article 7 of the Security of Supply Regulation that was submitted on 2nd March, 2012.

Results of the market test and the Security of Supply assessment shall be discussed with the Regulators prior to the submission of a draft proposal/request for exemption.

DETI and the CER are assessing the draft request for an exemption made by the TSOs.

Analysis

Forecasts of expected relevant demand and supply scenarios over the next five years are presented below. Based on this data it can be seen that it is unlikely that Northern Ireland will have an oversupply of gas until at least 2017 at the earliest. The TSOs therefore conclude that Virtual Reverse Flow can accommodate any required gas flows from NI to the Republic of Ireland (RoI) subsea system up until the time where the supply in Northern Ireland exceeds the demand. At this time it is more likely that the market may signal a requirement for physical reverse flow to export excess gas from Northern Ireland to RoI.

In 2010/11 93.6% of the Republic of Ireland's gas supply was delivered through the Moffat entry point. The contribution of Inch and Moffat entry points to gas demand is presented in Table 2. In the short to medium term, the majority of the island's demand will continue to be met from Great Britain imports through the Moffat Entry Point.

The Moffat entry point supplied 100% of Northern Ireland gas demand in 2010/11. This situation is likely to continue until one of the two gas storage projects proposed for Northern Ireland commences operation.

Jurisdiction	Moffat	Inch
Northern Ireland	100%	0%
Rep. of Ireland	93.6%	6.4%

Table 1: Percentage of ROI and NI Annual Gas Supply Met Through Moffat and Inch Entry Points

PSE Kinsale Energy currently operates the Kinsale gas production and storage facility which makes landfall at Inch. Production from the Kinsale and Seven Heads gas fields is in decline and

is small relative to total demand. The South West Lobe gas field operates as a seasonal storage facility and has a capacity of 230 mscm/yr (2,472.5 GWh/yr), a withdrawal rate of 2.6 mscm/d (27.95 GWh/d) and an injection rate of 1.7 mscm/d (18.275 GWh/yr).

The ROI supply outlook is expected to change when indigenous production gas from Corrib becomes available; the JGCS 2011 anticipates commissioning in autumn 2013 however a commissioning date of late 2014 now seems more likely with commercial market flows expected in 2015. Corrib gas is anticipated to meet 36.4% of the forecasted peak day demand and 66.5% of the ROI demand in 2015/16. However the production profile provided by the Corrib partners declines quite quickly after the third year, reducing to approximately 53% of its peak production within 6 years of production commencing.

Currently there are two storage projects being proposed for the Larne area in Northern Ireland. The developers of each project are currently examining the technical and commercial viability of developing salt-cavity storage in Larne. The Larne scenario in the JGCS 2011 assumed one of these projects would commence operations in 2015. However the earliest either of these projects is expected to commence operation is now understood to be 2017.

- Islandmagee Storage Project: A 500 mscm storage facility is proposed at Larne Lough with a delivery rate of 22 mscmd. A planning application was submitted in March 2010. This supply source was modelled in the JGCS 2011 and is assumed to represent a typical future gas storage project.
- North East Storage Project: A seismic survey in the Larne area has been conducted with a view to establishing the potential for salt cavern storage.

The graphs below outline the supply and demand outlook for the Republic of Ireland and Northern Ireland over the next 5 years for two of the scenarios considered in the recent JGCS 2011.

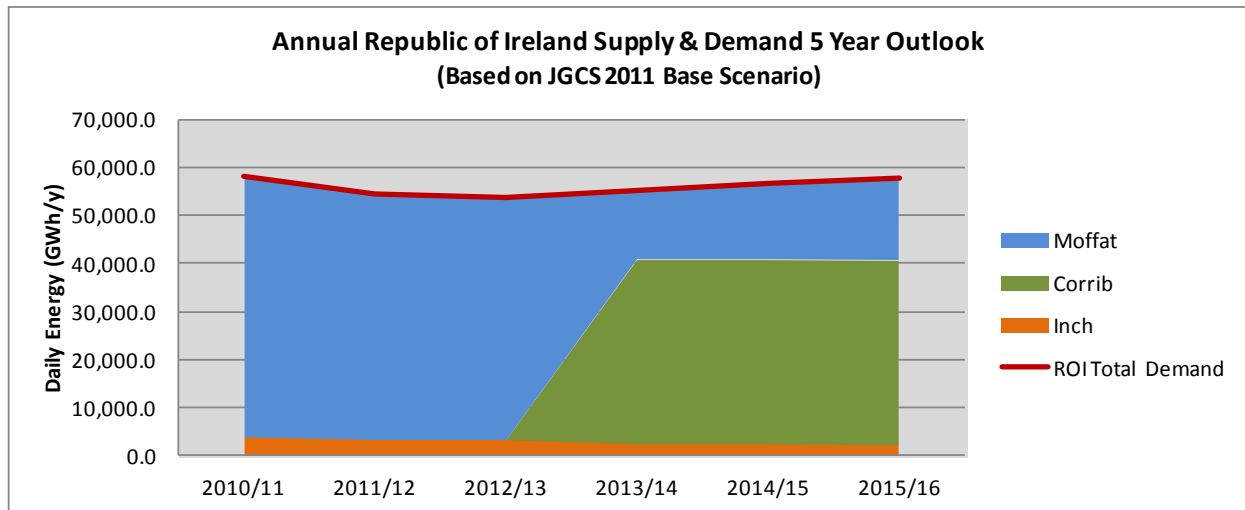


Figure 2: Republic of Ireland demand and supply - JGCS 2011 Base Scenario

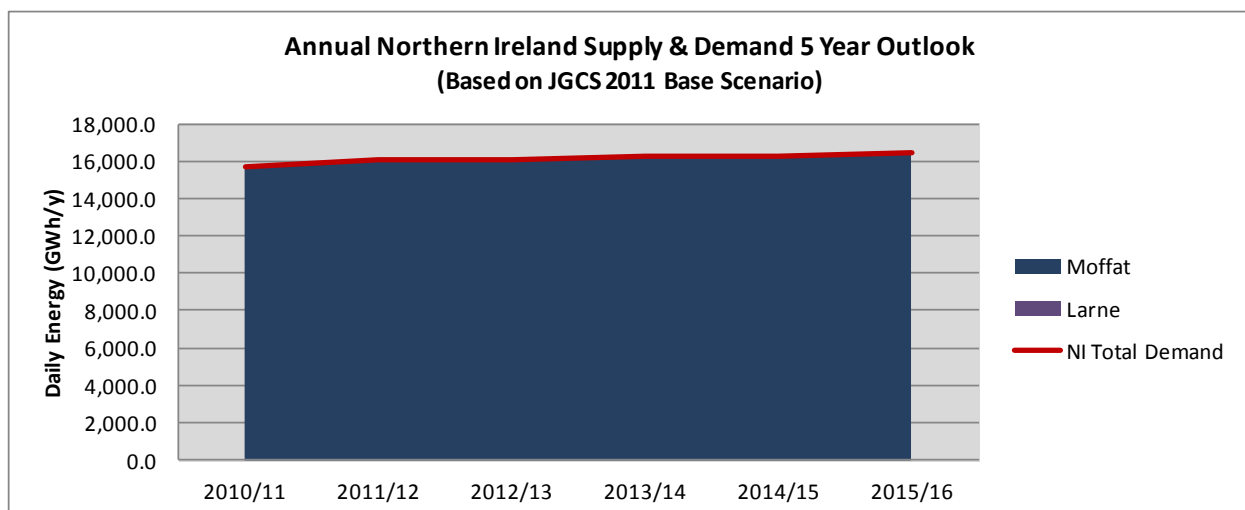


Figure 3: Northern Ireland demand and supply - JGCS 2011 Base Scenario

There are a number of other potential supply projects which are at different stages of development; some of these could have a significant impact on the supply outlook:

- Shannon LNG Terminal: This project has obtained the necessary approvals, but has yet to make a final commercial decision. There would be approximately a 4 year lead-in time associated with the construction of this facility.
- PSE Kinsale Energy: The existing storage operation may not be economically feasible on a standalone basis as production gas declines. In the JGCS 2011 existing storage operations were assumed to cease in 2013. Post 2013 it is assumed that the blow down of the storage wells may yield a combination of production and cushion gas during a further

3 year decommissioning period. A number of other storage projects are presently being considered by PSE Kinsale:

- a) Ballycotton gas storage project detailed in the 2010 JGCS, this project is currently on hold due to engineering difficulties and the current economic uncertainty.
- b) Expansion of the existing Southwest Kinsale gas field storage facility.
- Kish Banks Storage Project: Providence Resources Ltd., operating as Eirgas Ltd., has recently expressed interest in developing a gas storage facility within the Kish Banks in the Irish Sea. The facility is proposed to have a storage capacity of 590mscm. Operation is not anticipated until 2018.

It is not foreseen that supply in NI will exceed demand within the next 5 years. Therefore it is considered unlikely that Physical Reverse Flow on the SNP will be required by the market, however considering the range of projects which may commence in NI there is the possibility that the available supply will exceed demand from 2016 onwards. Figure 6 presents the supply and demand profile on the summer minimum day which is assessed based on the Larne Scenario of the JGCS 2011. Should there be insufficient market demand, the current process will be reviewed again in two years time, by which time the above projects could have significantly moved forward presenting an opportunity to export gas through the SNP into the ROI Network in the future.

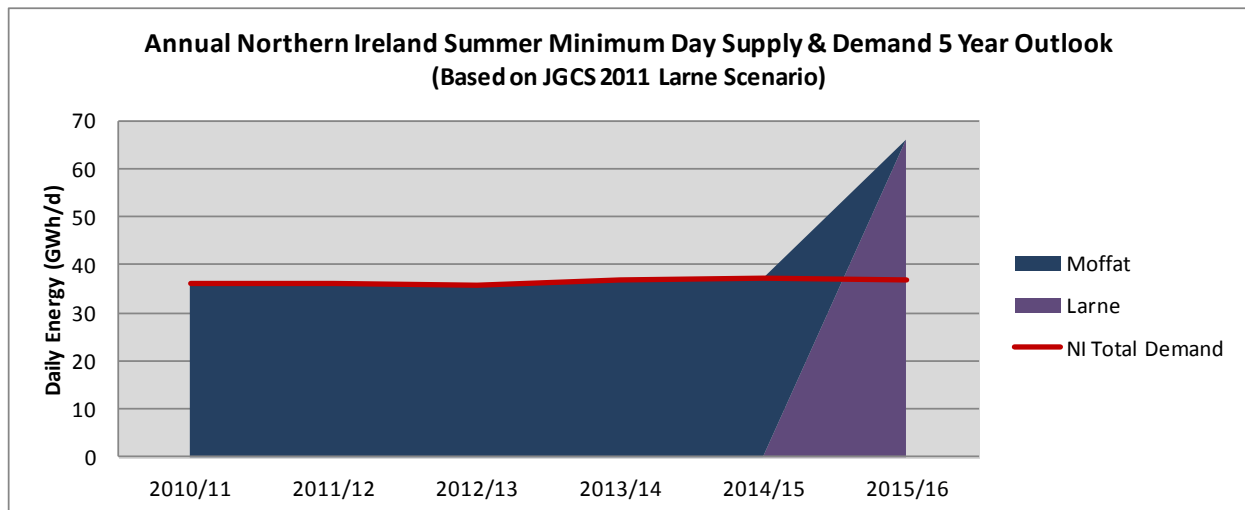


Figure 6: Northern Ireland Summer Minimum Day demand and supply –based on the JGCS 2011 Larne Scenario (Assumes one of the Larne storage projects commenced operation in 2015 and that the well is operating in export mode during a summer minimum day)

Currently Northern Ireland sources all its gas requirements through the Scotland Northern Ireland Pipeline (SNIP). With completion of the necessary market arrangements on the South-

North pipeline this year, the market will have access to supplies of gas through the interconnector system. This will further enhance security of supply to Northern Ireland.

Data and scenarios from the JGCS 2011 were employed in conducting the Risk Assessment for Article 9 of the Regulation EU/994/2010.

Technical feasibility

The SNP connects the Republic of Ireland Interconnector system to Northern Ireland. Currently, all Northern Ireland demand is supplied via the SNIP; however, high level arrangements are in place to facilitate the use of the SNP in the event of an emergency in either jurisdiction. Technically reverse flow on this pipeline should look at the cost of facilitating flows from Northern Ireland into the Interconnector system. However, it is difficult to see a benefit for either jurisdiction in doing so. The scope of the reverse flow preliminary analysis was expanded to explore the estimated costs associated with facilitating reverse flow from Northern Ireland to the Republic of Ireland onshore transmission system on the assumption that there is gas surplus to requirements in Northern Ireland.

Physical reverse flow from NI to ROI is only likely if one of the Larne storage projects proceeds and modelling to date assumes that Larne gas will be made available at 85 barg. To facilitate reverse flow from the NI system to ROI, the operating pressure for the SNP would need to be raised from 75 barg to 85 barg, however this process is envisaged to have minimal costs and complexity associated with it as it is envisaged to be a certification process. This pipeline was originally designed to operate at 85 barg.

Network modelling conducted to date under previous Joint Gas Capacity Statements assumed the necessary operational and commercial requirements are in place as part of the Common Arrangements for Gas (CAG) project, to facilitate the potential export of surplus gas from NI (as a result of Larne storage gas) into the Republic of Ireland. In order to successfully transport gas from NI to ROI at safe system pressures significant system modifications would be required, particularly at the Gormanston AGI. The inclusion of additional metering, flow control and pressure control equipment would, in particular, be required. Modifications may also be required at Carrickfergus and Ballanabanagh. Compression facilities north of Gormanston would also be required for firm gas flows from Northern Ireland to ROI onshore transmission system via the SNP. Without compression on the SNP, the time delay in switching over from physical forward flow to reverse flow would also need to be considered. Without compression, the volume of gas that could be exported between the two jurisdictions via the SNP would be subject to prevailing pressures at the northern and southern end of the SNP. This prevailing pressure is subject to both

local supply and local demand conditions. Given the number of uncertainties associated with the relevant supply projects, and the potential number of combinations and permutations, a definitive cost for such reinforcement is unavailable but is understood to be significant.

The maximum gas flow scenario used in this Market Assessment to allow gas to be exported from Northern Ireland to ROI based on the 5 year outlook is 2.5mscm/per day (27.6 GWh/per day) in the summer of 2016. It is worth highlighting that the maximum flow forecast for 2016 is only achievable if one of the Larne storage projects commences operations by 2015/2016. If one of the Larne projects were operational there may potentially be a surplus of gas in Northern Ireland which could be exported to the ROI market during the summer of 2016. However, the latest indications are that it will be 2017 before either Larne project is operational, in which case there is unlikely to be a requirement for physical reverse flow on the SNP in the next five years.

In summary physical reverse flow can be achieved by investing in measures to control the flow on the SNP (compression north of Gormanston, modifications to Gormanston, up-rating the SNP), however the current five year gas supply outlook indicates that 100% of the Northern Ireland gas demand is likely to be met by gas flows from Moffat. Currently 100% of such flows are facilitated through SNIP but it is possible that NI will require imports via the interconnectors and the SNP in this five year period.

Costs

The following table presents the potential order of magnitude costs that might be incurred if physical reverse flow on the SNP was to be facilitated. This list of assumed indicative costs is by no means comprehensive and depending on the supply outlook, some of these costs may not be applicable.

Project Description	Order of Magnitude Cost in €m (approximate high level preliminary costs, subject to engineering analysis)
Compression north of Gormanston	90
Gormanston AGI Bi-directional Modifications	3-5
SNP Uprating	1

Note: These order of magnitude costs are purely indicative; specific analysis and budget estimates can be prepared if required.

Tariffs

Tariffs for Physical Reverse Flow will be determined by the regulatory authorities in accordance with current processes applicable to each TSO, or the Capacity Allocation Management European Network Code (or European Tariff guidelines), depending upon which prevails at the time of any commitment.

Next Steps

Market participants will be given until **Monday, 7th May, 2012** to respond to this Market Test, indicating by way of a non-binding agreement their interest in Physical Reverse Flow capacity through the SNP.

Where expressions of interest are received, the TSOs will agree the process steps and timetable to move to a binding commitment. In so far as it possible the existing processes for incremental capacity sales will be used, but the timing of this process may vary depending upon when potential users have indicated that they would like the capacity commitment to start.

Following the assessment of the market by the TSOs and the outcome of any move towards binding commitments, if market demand is deemed to be sufficient, the TSOs will submit a proposal for Physical Reverse Flow to the Regulators. If market demand is deemed to be insufficient, the TSOs will submit information to the Regulators to support draft request for exemption from Physical Reverse Flow which was submitted on 2nd March, 2012.

The Regulators will assess the draft proposal or draft request for an exemption made by the TSOs and comment on any amendments that may be needed, as appropriate.

APPENDIX A**Questionnaire**

No.	Question	Answer
1.	Name of Company: Address:	
2	Do you broadly agree with the analysis contained within this document concerning the potential supply / demand situation on the island of Ireland over the next 5 years? If no, please provide details of your analysis. <i>(Please use separate sheet if necessary)</i>	YES/NO

No.	Question	Answer
3.	<p>Is your company interested in reserving physical reverse flow capacity on the South North pipeline?</p> <p>If yes, when would be the expected start date for physical reverse flow capacity?</p>	<p>YES/NO</p> <p>Start Date:</p>
4.	<p>If yes, please indicate subject to contract the volume, duration and price to which you would be prepared to commit.</p> <p>a) Volume (in tranches of 30.000KWh/day):</p> <p>b) Duration (in years):</p> <p>c) Maximum Total Price (in €):</p>	<p>(a)</p> <p>(b)</p> <p>(c)</p>
5.	<p>Subject to acceptable terms and conditions are you willing to enter into a long term contract which covers the indicated amount of capacity (in the previous question)?</p>	<p>YES/NO</p>
6.	<p>Contact Person:</p> <p>Title:</p> <p>Date:</p>	