

Basic Transporter Virtual Reverse Flow
Arrangements
7th July 2011
Version 1.0

Moffat Virtual Reverse Flow

- Basic Transporter Virtual Reverse Flow Arrangements -

Consultation Paper

7th July, 2011



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1. Background

A Virtual Reverse Flow service is currently being developed at Moffat. Both National Grid and Gaslink have issued Code Modification Proposals to modify their respective codes to implement a virtual reverse flow service. The existing Moffat Agency agreements will also need to be altered to introduce this service. In December 2010 the CER issued a consultation paper CER 10/238 "Reverse Flow Arrangements at Moffat" with a view to making a decision on the arrangements for the service.

The primary aims are to develop a virtual reverse flow service at Moffat that satisfies the issues raised by the European Commission with regard to the 2nd Energy package, maximise cross-border capacity and be useful and accessible to system users. The target date for implementation is 1st October 2011.

Virtual Reverse Flow arrangements are discussed at regular joint National Regulatory Authorities (CER & Ofgem) and Transmission System Operators' (TSOs) meetings. The Joint TSO Moffat Virtual Reverse Flow Options paper, which was circulated to the Moffat Shipper community on 19th April 2011, forms the basis for these discussions. At a meeting held on 20th April 2011 all parties agreed that it is important to get arrangements in place for virtual reverse flow as soon as possible. If this can not be achieved through modifying existing agency arrangements, then a basic TSO allocation arrangement will be implemented. National Grid and Gaslink have been in discussions regarding the development of such an arrangement.

It is recognised by all parties that there are a number of parallel processes that may impact upon the design of this service in the short to medium term. These include;

- The proposed EU Congestion Management Principles (CMP)
- The ERGEG/ACER Capacity Allocation Framework Guideline and anticipated ENTSOG European Network Code
- The Common Arrangements for Gas (CAG) in the island of Ireland
- Uniform Network Code (UNC) Exit Reform
- CEER Gas Target Model

The TSOs and regulators will continue to work together as appropriate to manage the implementation of these initiatives as they arise but do not intend to allow these uncertainties to unnecessarily delay or hinder the introduction of the Virtual Reverse Flow service described in this document.

The Moffat Reverse Flow Arrangements Options paper outlined the following options:

- Option 1: Moffat Agency to administer Virtual Reverse Flow
- Option 2: New Agency to administer Virtual Reverse Flow Arrangements
- Option 3: Basic Transporter Virtual Reverse Flow Arrangements

Option 4: More Involved Transporter Virtual Reverse Flow Arrangements
Option 5: Transporter Arrangements for Forward Flow and Virtual Reverse Flow

The purpose of this document is to further develop Option 3: Basic Transporter Virtual Reverse Flow Arrangements in accordance with the request of the regulators. The potential opportunities, risks and timelines are assessed. The document outlines the impacts on existing arrangements and future IT development requirements. The document also explores in more detail the proposed product, TSO coordination, and the Virtual Reverse Flow interruption procedures. While this document has been primarily released for information purposes the TSOs welcome all significant comments and any other observations. Exceptionally comments are being actively sought on the availability and tariff sections of this paper (Sections 5 and 6). Any comments should be submitted within 2 weeks i.e. by 5.00pm on Thursday 21st July. Comments should be submitted to:

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nick.king@uk.ngrid.com

The proposals presented in this document represent the current thinking of the TSOs. Because the work is in progress, some changes may be made at a later date. The priority is to have a workable solution implemented by 1st October 2011 and the focus will be on achieving this objective. It is the view of the TSOs and regulators that enhancements to the service may be implemented once the basic service is established.

2. Supporting Information

Date	Released by	Document
Jan 2010	Gaslink	Code Mod A043 Virtual Reverse Flow at Moffat
June 2010	Gaslink	Virtual Reverse Flow Business Rules
August 2010	Gaslink	TSO to TSO nom and allocation proposal
Nov 2010	Ofgem	Proposal to Designate Moffat as an Entry Point
Dec 2010	CER	Consultation paper on Reverse Flow Arrangements at Moffat (CER/10/238)
July 2011	National Grid	Code Mod 0352 Introduction of an interruptible reverse flow service at Moffat
April 2011	Gaslink & National Grid	Moffat Agency Arrangement Options Document
July 2011	CER	Decision Paper on the Institutional Arrangements for Virtual Reverse Flow at Moffat (CER/11/113)

3. General Principles

The following are the general principles on which the proposed Virtual Reverse Flow service has been based:

- a) Operational Integrity and Security of Supply to the Republic of Ireland, Northern Ireland and Isle of Man markets shall at all times be maintained in the development of this service.
- b) To ensure system integrity Gaslink will offer a basic product in October 2011 which may be enhanced when the service is established . The introduction of this service will require changes to the Connected Systems Agreement between Gaslink and National Grid.
- c) Capacity will be offered on an Interruptible basis by both Gaslink and National Grid.
- d) Any adverse impact of the introduction of this service on forward flow Shippers at Moffat should be minimised and avoided if possible.
- e) The Interruptible Exit Capacity at the Virtual Exit Point from the Irish Transportation System (VExitP) will be sold on a FCFS basis by Gaslink and will be subject to an appropriate tariff as approved by the CER.
- f) The Interruptible Exit Capacity product available at the VExitP will be made available on a Daily basis, at the day-ahead stage according to a defined booking window. A Within Day Exit Capacity product will not be available at the VExitP by Gaslink. This may be reviewed at a later date when the service is operational.
- g) Gaslink will make available VExitP Capacity to Republic of Ireland Shippers only. It is intended that this service will be extended to the Isle of Man at a later date and to Northern Irish shippers as part of the CAG (all island) project.
- h) The Interruptible Entry Capacity will be sold via the day ahead auction process by National Grid in accordance with existing UNC rules.
- i) A basic TSO allocation process will be available until Shipper agency arrangements are in place. After this they will continue as default arrangements i.e. if there is a shipper managed agency arrangement in place and the shipper's agents fail to undertake the allocation process appropriately, or its allocations are rejected, then the TSOs will allocate energy flows.

4. Coordination

While it is recognised that Gaslink and National provide different booking mechanisms, where possible both TSOs have coordinated to introduce a feasible Reverse Flow service.

Availability

The Virtual Exit and the Virtual Entry Capacity available will be separately calculated by Gaslink and National Grid. The Gaslink Virtual Exit Capacity will be published via the Gaslink market facing system at the day ahead stage 12:00 on D-1. The National Grid Entry Capacity made available will be notified via an Active Notification System (ANS) to GB Shippers by 12:00 hrs on D-1 by National Grid in accordance with current processes. The capacity offered on each side of the IP will not necessary be the same quantity.

Booking Process

Gaslink

In order to submit an application for Daily Interruptible VExitP Capacity, a shipper will need to be a VExitP Registered Shipper. It is proposed that all Registered Shippers at the Moffat Entry Point are by default registered at the VExitP. [If there are agency rules in place for Reverse Flow, then adherence to the Agency procedure will be a pre-requisite to Capacity booking.] If required a registration process for a non Moffat registered Shipper may be developed in time.

Capacity will be booked on a FCFS basis on the Gaslink System. It is proposed that the Daily Interruptible VExitP Capacity Booking Window for a Day shall commence at 12:00 hours on D-1 and shall remain open until 17:00 hours on D-1. National Grid and Gaslink will communicate on the timing of the National Grid day-ahead auctions and the Gaslink day-ahead FCFS booking window.

National Grid

As with any other entry point, GB Shippers may use the Gemini system to apply for Daily NTS Interruptible Entry Capacity by submitting a bid at any time from the 7th Day (D-7) before the Gas Flow Day until 13:00 hours on the Preceding Day (D-1). The bid may be withdrawn or amended before 13:00 hours on the D-1.

National Grid will notify Users via ANS (Active Notification System) of the amount of available interruptible entry capacity at Moffat by 12:00 hours at D-1 and the auction will be conducted by 14:00 hours. National Grid will not later than 15:00 hours on D-1 inform each GB Shipper of its Daily Interruptible capacity bids which have been accepted.

Interruptions

Interruptions will be coordinated between National Grid and Gaslink. The proposed default standardised interruption lead time will be two hours. The interrupting TSO notifies its interrupted shipper and the other TSO. It is proposed to automate some of this process in order to maximise the

time available to interrupted network users to redefine their programmes such that they can renominate down.

Matching, Nominations and Allocation

Coordination will take place to achieve the Basic TSO to TSO arrangement for allocations. These details are explored in section 7 of this document. The TSOs will not carry out matching.

	Gaslink	National Grid
Publish Availability	12:00 D-1	12:00 D-1
Booking/Bid Window	12:00 D-1 to 17.00 D-1	06:00 D-7 to 13.00 D-1
Booking/Bid Allocation	12:00 D-1 to 17.00 D-1	No later than 15.00 D-1
Interruption	18:00 D-1 to 01.45 D	15:00 D-1 to 01:00 D
Nomination/Renomination	18:00 D-1 to 20.00 D	D-30 to 14:30 D-1 / 15:00 D-1 to 04:00 D
Flow Allocation	16:00 D+1	Initial D+1, Final M+15; as per UNC for any other entry point

Table 1: Gaslink/National Grid Reverse Flow Programme at and before Day D

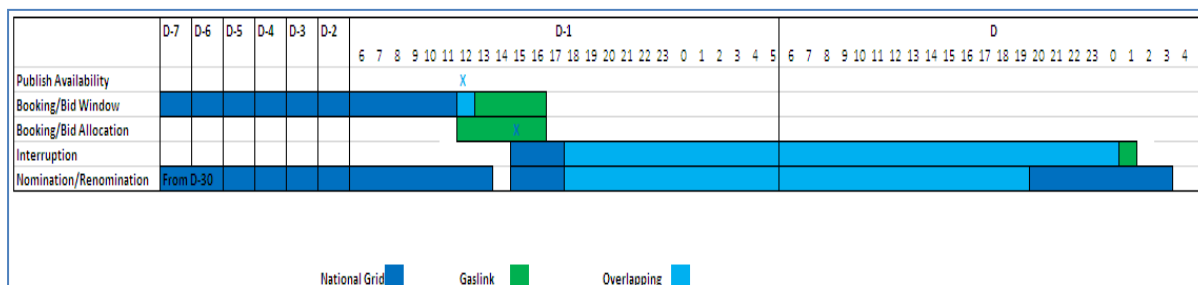


Fig 1: Schematic of Gaslink/National Grid Reverse Flow Programme at and before Day D

5. Product

Gaslink Product

Principles

- a) The Moffat Reverse Flow product will be an interruptible product as it is only available when sufficient gas is physically flowing through the Moffat IP in the direction of ROI.
- b) The Moffat Reverse Flow product will be interrupted where necessary to ensure system integrity. Moffat Reverse Flow will not be made available when it is likely to cause excessive suboptimal performance at Beattock (e.g. excessive switching on and off of compressors). A fixed minimum flow rate will be used such that Moffat Reverse Flow product is only available when flows are above this rate.
- c) Changes in Beattock compressor station configurations are currently proposed, and are provisionally envisaged to come into effect in Summer 2012. The configuration change is required with the impending introduction of Corrib gas onto the ROI network reducing the quantities required to flow from GB. This configuration will allow reduced quantities of flow through the Beattock compressor station, through a volume control process. It is anticipated that more capacity could be made available for reverse flow when the proposed configuration change is complete. A review will be carried out at that stage with a view to enhanced Moffat Reverse Flow product offerings.
- d) In theory, the volume of gas going through the Beattock compressor station reduces with the introduction of Reverse Flow. If flows are effected in practice this will effect shrinkage costs. These will be apportioned as per Part E Section 2 of the Code of Operations.

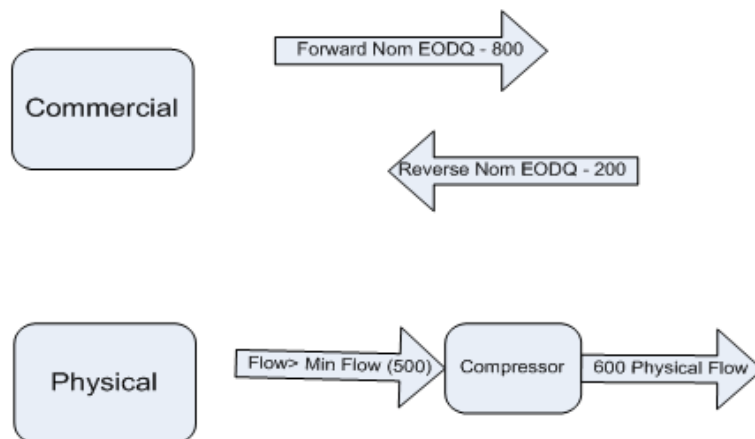


Fig 2. Commercial & Physical Flow example

- e) The minimum flow rate may be reviewed on an annual basis by Gaslink and any updates will be issued prior to the start of the gas year. The Minimum flow rate can be changed during the year for exceptional circumstances subject to CER approval.
- f) Required forward flow quantities must be maintained to facilitate Northern Ireland and Isle of Man. Initially the available quantity of virtual exit capacity may be reduced to reduce the risk of daily interruptions. It is currently envisaged that fully automated systemization will not be in place for Oct 2011. If full systemization is introduced it may be possible to increase the available quantity.
- g) Curtailment of Interruptible Exit Capacity may take place where a transportation constraint exists, and Gaslink believes that this may be avoided or remedied by the curtailment of Interruptible Exit Capacity held by Users at the Moffat Connected System Exit Point

Availability

Capacity to be made available from Oct 2011 is calculated in respect of:

- a) Low suction pressure is associated with high demand in UK which is associated with high demand in Ireland. In general minimum flow through Beattock is reduced as a result in winter time.
- b) BGN Grid Control use +/-20% of EODQ when profiling as specified in the Connected Systems Agreements. +20% of Beattock Min Flow = Allowable Min Flow
- c) If the Reverse Flow service is to be introduced by Oct 2011 then systemization of the interruption process will be limited. A service with minimal Reverse Flow interruptions is key in implementing the service in such a short time frame.
- d) Analysis
 - a. Information from GTMS over the past 3 years shows that the variation from D-1 Nominations to EODQ Renominations are very substantial. For example on 04/12/2009 the EODQ at D-1_{11:00} was 128.2GWh but the EODQ at D_{02:00} was 223.3GWh, a increase of 95GWh, similarly on 04/04/2011 the EODQ at D-1_{11:00} was 192.5GWh while at D_{02:00} the EODQ was on 131.9GWh, a drop in Nominations by 60.5GWh. This sample data shows that D-1_{11:00} Nominations are not an accurate basis for determining Available Reverse Flow Quantity. If the equation Reverse Flow Quantity Available = D-1 FFnom – Min Flow then the available quantity would change constantly throughout the day and interruptions would be constantly evoked. It should be noted that large variations between day ahead nominations and actual within day consumptions as per the above example days are becoming increasingly common. This is due to the increasing volumes of wind on the electricity system and the high proportion (60%) of gas fired plant being used for

electricity generation. This situation is likely to be exacerbated as the 2020 renewable targets are realized.

- b. With such a large Min Flow Figure if the equation Reverse Flow Quantity Available = D-1 FFnom – Min Flow was utilised any small changes in FFnom creates a large proportional change in the Reverse Flow Quantity figure. Thus this could be gamed.
- c. To eliminate reliance on estimated day ahead forward flow nominations, gaming and excessive interruptions the proposal to use a Seasonal Product was analysed. The Seasonal product is defined for this purpose as starting on the 01st November and finishing on 28th February. Generally forward flow EODQs are higher, and differential pressures at Beattock are more favourable, during this period. To explain the reasoning behind this selection an analysis was completed using GTMS information of Forward Flows at Moffat over the past 3 years. 30 GWh of Reverse Flow over the seasonal duration would have resulted in 15% of Seasonal Period days having the potential for interruption (i.e. 5% of days over the full year). These percentages only take into account finalized EODQ figures, in reality renominations during the day will increase the percentage chance of interruption.
- d. Beattock compressor system reconfiguration is proposed to be available in Summer 2012. This will reduce the current minimum forward flow figure. The use of the Moffat Reverse Flow Product may be reviewed at this time and greater capacity can be made available if required.

Seasonal Product Advantages:

- Quantity based upon historical physical flow EODQ figures, not initial day-ahead nominations.
 - Control level of interruption.
 - Aspire to only make product available when it is physically available.
 - Gradually introduction of service will also give all parties an opportunity to learn how the product will be used before the possibility of increasing the quantities offered at a later date.
 - Historical data shows that currently indigenous sourced/stored gas is brought onto Irish Transmission System over the colder months of the year.
 - The Seasonal Product is a fixed maximum quantity of product which may give the market better knowledge than finding out what the maximum available capacity quantity is at the day-ahead stage.
- The Virtual Reverse Flow product can also be offered throughout the year. However it will be interrupted more often during the Shoulder and Summer periods.

- We welcome Shippers view on their requirements for a seasonal product (with low rates of interruption and lower levels of availability) or an annual product (with high rates of interruption during the Shoulder and Summer periods and greater levels of availability).

Graphical Analysis (*These graphs are for illustrative purposes only*)

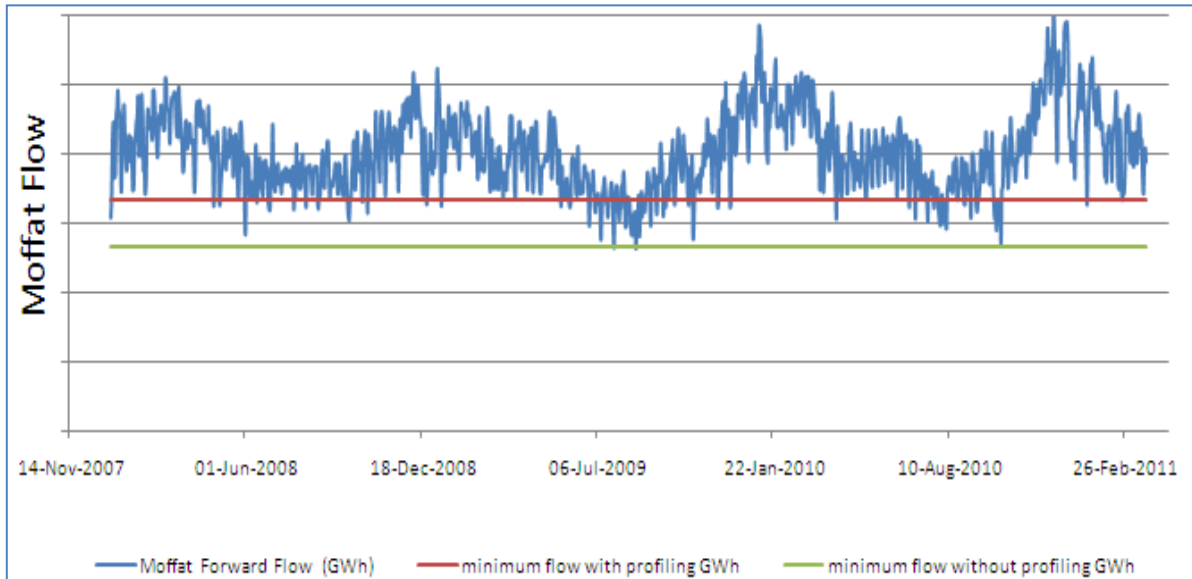


Fig 3: Analysis of Physical Forward Flows at Moffat. No Reverse Flow.

Figure 3 uses finalised EODQ information for each day from 01st January 2008 until 23rd March 2011. The graph assumes the difference between EODQ and physical flow is negligible for the purposes of this exercise. Figure 3 shows the physical forward flows at Moffat over this period. The green line is the minimum flow through the compressor at Beattock. The red line is the min flow + 20% to allow for profiling. During the summer time the flow often falls below the red line. The graph shows that there is more availability for a reverse flow product during the winter time.

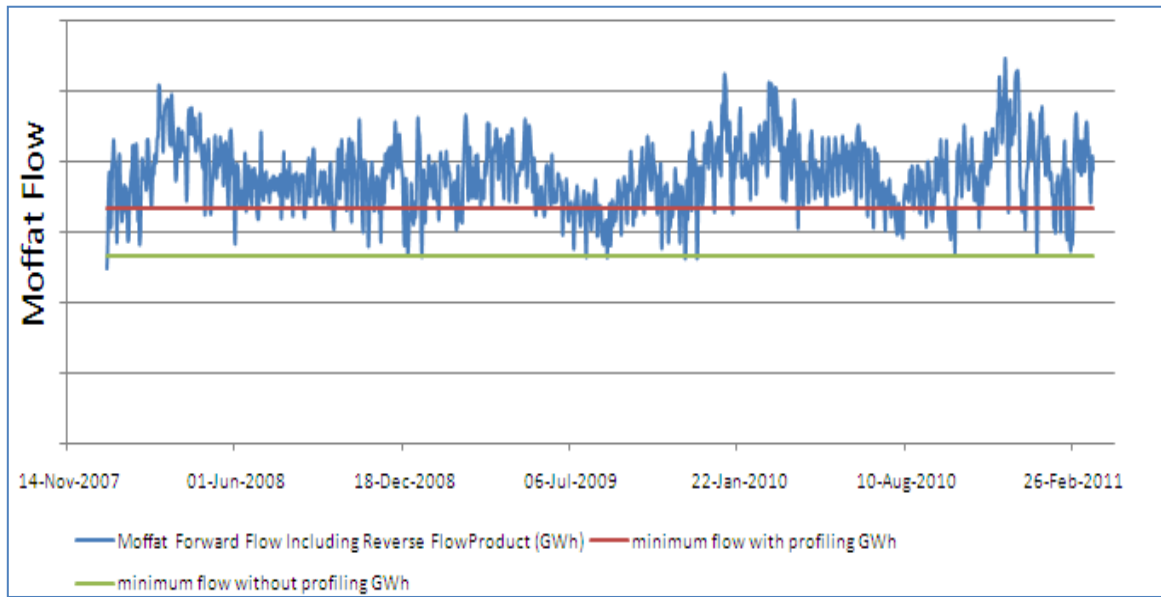


Fig 4: Analysis of Physical Forward Flows at Moffat with Reverse Flow Nominations of 30GWh applied over Seasonal Period.

Like Figure 3, Figure 4 uses finalised EODQ information for each day from 01st January 2008 until 23rd March 2011. The graph assumes the difference between EODQ and physical flow is negligible for the purposes of this exercise. Figure 4 graphs physical forward flows if Commercial Forward Flow EODQ remained the same but Reverse Flow EODQ of 30 GWh/day over the Seasonal Period was applied, thus reducing Physical Forward Flow over the Seasonal Period. It should be discernable that the introduction of Virtual Reverse Flow reduces the physical forward flow over the Seasonal Period. If physical flows fall under the red line during this period interruption notices will be issued to reverse flow shippers. 30 GWh of Reverse Flow over the seasonal duration would have resulted in 5% of days of the full year having potential for interruption (i.e. 15% of days over the seasonal period have the potential for interruption).

It should be noted that the EODQ figure on a Day changes throughout the Day with changing renominations. The figures shown in the analysis are finalised EODQ. It would not have been possible to graph every EODQ throughout the day for 3 years. As a result interruptions during the day may be higher due to changing renomination figures. To limit the frequency of interruption notices it is proposed to check if such notices are required at a limited number of time intervals throughout the day. The timing of these intervals will be at the discretion of Gaslink and will ensure system integrity.

Availability Quantity Publication

The Available Daily Interruptible VExitP Capacity Quantity shall be published by Gaslink by 12.00 on D-1 via Gaslink's Market Facing Systems.

While the Seasonal Reverse Flow Product is proposed to remain at a constant quantity, Gaslink will have the right to amend the Available Daily Interruptible VExitP Capacity both before and during the relevant Gas Day and will inform Shippers via Gaslink's Market facing Systems. This will be done to ensure system integrity.

National Grid Product

Curtailement of Interruptible NTS Entry Capacity

Interruptible NTS Entry Capacity held by Users at an Aggregate System Entry Point may be curtailed in the circumstances described below and in accordance with Uniform Network Code (Transportation Principal Document B2.9) and the System Management Principles statement which can be found via the following link:

<http://www.nationalgrid.com/NR/rdonlyres/691FE647-8AD1-4F2F-B2C8-46C9D0769F62/45109/2011DraftSystemManagementPrinciplesStatementV27.pdf>

Curtailement of Interruptible NTS Entry Capacity may take place where an Entry Capability Shortfall¹, Transportation Constraint² or a Localised Transportation Deficit³ occurs or may occur, and National Grid believes that this may be avoided or remedied by the curtailement of Interruptible NTS Entry Capacity held by Users at one or more Aggregate System Entry Points (whether or not those Aggregate System Entry Points are affected by the Transportation Constraint or Localised Transportation Deficit).

The time with effect from which any such curtailement would take place can not be earlier than 06:00 hours nor later than 02:00 hours on the relevant Gas Day and at least 60 minutes notice will be provided to Users.

¹ An Entry Capability Shortfall in respect of an Aggregate System Entry Point for a Day is the amount (in kWh) by which the amount of (or rate at which) gas is or will be delivered exceeds the System Entry Capability (as determined by National Grid).

² A Transportation Constraint may affect a system point, impairing the availability of gas for offtake or the acceptance of delivery gas, restricting gas flows in any part of the total system. The constraint may be due to the extent or distribution of supply or demand, operation or size of the total system and all operational requirements regarding pressures are taken into account.

³ A Localised Transportation Deficit may affect a part of the NTS, resulting in a deficiency in the quantities of gas National Grid can make available for offtake in that specific part of the NTS. This may occur from the extent or distribution of supply or demand, size or operation of any part of the system but does not result from a Transportation Constraint affecting a particular System Entry Point or System Entry Points.

Allocation of Daily Interruptible NTS Entry Capacity

Any Interruptible NTS Entry Capacity made available at Moffat ASEP (for the purposes of the commercial reverse flow service) would be solely at the discretion of National Grid NTS, however it is expected that National Grid would make available a daily quantity of Interruptible NTS Entry Capacity that is equal to the quantity of Firm NTS Exit Capacity available at the Moffat CSEP for the same period.

All bids for Daily Interruptible NTS Entry Capacity at an ASEP are ranked in order of bid price (with the highest price ranking first). Currently the Daily Interruptible NTS Entry Capacity auction has a zero reserve price (i.e. Users must bid at zero or higher).

Where the amount of Interruptible NTS Entry Capacity applied for under a bid exceeds the amount of available NTS Entry Capacity remaining (after, for example, allocation to higher priced bids) the User will be allocated an amount equal to the remaining unallocated amount.

Where each of two or more bids specifies the same bid price, and the amount applied for in aggregate under such bids exceeds the amount of available NTS Entry Capacity remaining, then this remaining amount will be allocated pro rata, based on the amounts applied for in each such bid.

Where the amount to be allocated in respect of a bid is less than the minimum amount specified in the capacity bid, the bid will be disregarded and a revised allocation will be made between remaining equal price bid(s), or (as the case may be) an allocation made in respect of the next priced bid.

Where the amount to be allocated in respect of any bid is less than the minimum eligible amount (100,000 kWh), National Grid will not accept that or any further capacity bids. National Grid will, not later than 15:00 hours on the Preceding Day, inform each User of its daily interruptible capacity bids which have been accepted and the amount of Daily Interruptible NTS Entry Capacity which it is registered as holding pursuant to each such accepted bid.

6. Tariffs

Gaslink Tariff

Pricing Principles

Based on the requirements of a virtual reverse flow product and the specific context of the ROI network, Bord Gais Networks (BGN) proposes the following pricing principles which would underpin the tariff methodology for the virtual reverse-flow product at Moffat on the Irish side of the flange.

1. Article 3 of EC Regulation No 1775/2005 governs tariffs for access to networks in EU member states. It states that tariffs should:
 - a) Take account of the need for system integrity and its improvement and reflect actual costs incurred;
 - b) Be applied in a non-discriminatory manner;
 - c) Facilitate efficient gas trade and competition;
 - d) Avoid cross-subsidies between network users;
 - e) Provide incentives for investment and maintain or create interoperability for transmission networks, and
 - f) Not restrict market liquidity nor distort trade across borders of different transmission systems.

2. In addition to the above, BGN believes the following principles are also key to any tariff structure:
 - a) Each part of the transmission system used to transport gas should be remunerated (Principle of 'No Free Ride');
 - b) Tariffs should incentivise efficient use of the network and hence increase gas use where appropriate;

3. As outlined in the Business Rules developed by Gaslink, the introduction, implementation or operation of the reverse-flow product should not adversely affect parties who only book capacity under forward-flow arrangements.

4. Day-ahead capacity is to be offered on an interruptible basis at a Virtual Exit Point ('VEP') on the Irish side of the Moffat flange. It is proposed that in the case of interruption a refund will be applied in proportion to the amount of interruption.

Proposed Tariff Arrangement

- The Moffat tariff is calculated based on the total Moffat revenue requirement.
- The resulting Moffat tariff is then applied to both forward and reverse flows on the basis that the same network is being used regardless of the direction in which the gas flows.
- The cost of developing and administering the new virtual reverse-flow arrangements will be added to the existing Moffat revenue requirement.
- The Transporter will not earn incremental revenue above the allowed CER regulated revenue from the virtual reverse flow product at Moffat.
- The revenue earned from this virtual reverse flow product will go to reducing the CER regulated Moffat tariff.

Capacity

- Those Shippers who have an existing Moffat entry booking for forward-flow will be offered reverse-flow capacity at a discounted tariff. Feedback is welcomed from respondents as to what the appropriate discount should be.⁴⁵
- For those Shippers who do not have an existing Moffat entry booking, they will be required to pay the full Moffat tariff for reverse-flow capacity.
- Procurement of forward-flow capacity on the secondary market does not entitle the holder of this secondary capacity to avail of the discounted reverse-flow tariff, i.e. in order to avail of the discount a Shipper must hold Primary Moffat Entry Capacity.

Commodity

- The full Moffat commodity charge will be applied to allocations for both forward and reverse flows. The operational arrangements to be put in place will have separate contracts and allocations for flows in each direction.

⁴ OpenGrid Europe & Gasunie in Germany offer a 40% discount on the firm capacity tariff for virtual reverse-flow capacity

⁵ ENI Gas Transport in Germany offers a 70% discount on the firm capacity tariff for virtual reverse-flow capacity.

In conclusion, this arrangement is proposed as it:

- Is consistent with the principles outlined above,
- Protects Shippers who do not participate in reverse-flow and therefore also protects the end consumer,
- Avoids cross-subsidy between forward and reverse flows, and
- Ensures there is 'no free-ride'.

For the daily virtual reverse-flow product the relevant Short-Term multiplier will be applied and only in the case of interruption will a refund be applied to the shipper. The refund applied would be in proportion to the amount of interruption. The example below shows the tariff and gives an indication of how a discount would be applied for a day in October:

IC Capacity Annual Tariff	October Daily Multiplier	IC Daily €/peak day MWh	2% of Noms Interrupted Discount/Refund	20% of Noms Interrupted Discount/Refund
€215.83	0.66%	€1.43	€0.03	€0.29

Please note that for someone that already has forward flow capacity and is paying a discounted price for the virtual reverse flow capacity, the refund will be based on a percentage of the discounted virtual reverse flow price and not on the full Moffat tariff for reverse flow capacity.

Recommendation

For Shippers with existing forward-flow capacity bookings in place, the reverse-flow tariff applied will be the prevailing Moffat tariff, discounted by an appropriate amount yet to be determined. All other Shippers will be charged the full Moffat tariff if they wish to book reverse-flow capacity. Full Moffat commodity tariff will be applied to all allocations. For someone that already has forward flow capacity a refund will be provided in the event of interruption of reverse flow capacity and this refund will be based on the discounted virtual reverse flow price not the full Moffat tariff for reverse flow capacity. We welcome Shippers views on BGN's tariff proposals.

National Grid NTS Charging Methodology

National Grid NTS's Charging Methodology is contained within the Uniform Network Code (UNC) Section Y.

Capacity

Interruptible NTS Entry Capacity currently attracts a zero reserve price. The actual charge paid is dependent on the auction outcomes.

Commodity

NTS Commodity charges will be applied to the virtual reverse flow energy allocations in accordance with the UNC charging methodology.

7. Interruption

Gaslink Details

Principles

- a) Curtailment of Interruptible Exit Capacity may take place where a transportation constraint may exist, and Gaslink considers that this may be avoided, alleviated or remedied by the curtailment of Interruptible Exit Capacity held by Users at the Moffat Connected System Exit Point.
- b) The proposed default standardised interruption lead time will be two hours. The interrupting TSO notifies its interrupted shipper and the other TSO.
- c) If Shippers do not renominate down following the issue of an interruption notice they will be liable for a Failure to Interrupt charge. [Disbursement Account rules must be reviewed, in particular if there is only one Reverse Flow Shipper]
- d) Interruption notices will inform Shippers of their revised utilizable daily interruptible VExitP Capacity.
- e) Shippers are interrupted on a pro rata basis using an Interruptible Scaling Factor.

Interruption Methodology

Where Gaslink deems it prudent, having regard to [system integrity and/or operational reasons and/or] anticipated or actual gas flows, it may issue an “Interruptible Capacity Interruption Notice” via Gaslink’s Market Facing Systems at any time between [18:00] hours on D-1 and [01:45] hours on Day D. Gaslink may issue more than one Interruptible Capacity Interruption Notice in respect of a Day.

Where Gaslink deems it necessary to issue an Interruptible Capacity Interruption Notice it shall calculate an “Interruptible Capacity Scaling Factor” which shall be applied to each Shipper’s Interruptible VExitP Capacity according to the following formula:

$$\mathbf{RIC = BIC * (ICSF1 * P1 + ICSF2 * P2 + + ICSFn * Pn) / 24}$$

Where:

RIC - Revised Utilisable Daily Interruptible VExitP Capacity for a Shipper

BIC - Booked Daily Interruptible VExitP Capacity for a Shipper prior to the Interruption being required

Where for each interruptible curtailment notice (from 1 to n) given in respect of the Entry Point

ICSF - Interruptible Capacity Scaling Factor

P is the period in hours from the curtailment effective time until the end of the Gas Flow Day or (if earlier) the curtailment effective time of a subsequent curtailment notice

The Interruptible Capacity Interruption Notice will be issued to affected Shippers and will specify the Effective Time of the Interruptible Capacity Interruption Notice, the Shippers RIC and the ICSF.

[Where the Revised Booked Daily Interruptible Capacity determined is less than the gas known to have flowed at the relevant Entry Point then the Revised Booked Daily Interruptible Capacity shall be set equal to the gas which is deemed to have flowed against Daily Interruptible Capacity by the Effective Time of the Interruptible Capacity Interruption Notice.]

As an example refer to Figure 4. An interruption notice would be issued on a day over the winter period when the EODQ of FFnom-RFnom < Minimum flow rate with profiling, i.e. when the EODQ of Figure 4 falls below the red line.

Overruns

An Interruptible VExitP Nomination in excess of the Shippers Available Interruptible VExitP Capacity will be rejected, such that a Shipper shall not incur Overruns with respect to such Shippers VExitP Capacity.

Where a Shipper receives an Interruptible Capacity Interruption Notice from Gaslink then it shall be required to reduce its Interruptible VExitP Nomination/Renomination so that it is not in excess of the Revised Utilisable Daily Interruptible Capacity.

If a Shipper does not reduce its Interruptible Nomination/Renomination such that it is in excess of the Revised Utilisable Daily Interruptible Capacity then the Shipper will incur a Failure to Interrupt charge. A nomination greater than the RIC will not be accepted by Gaslink and flow will be profiled for a user's VExitP Nomination/Renomination or RIC, whichever is the smaller quantity. Allocations after the day will also be made upon this basis.

NATIONAL GRID DETAILS

Principles

- a) Curtailment of Interruptible NTS Entry Capacity may take place where an Entry Capability Shortfall, Transportation Constraint or a Localised Transportation Deficit occurs or may occur, and National Grid believes that this may be avoided or remedied by the curtailment of Interruptible NTS Entry Capacity held by Users at one or more

Aggregate System Entry Points (whether or not those Aggregate System Entry Points are affected by the Transportation Constraint or Localised Transportation Deficit). The time with effect from which any such curtailment would take place can not be earlier than 06:00 hours nor later than 02:00 hours on the relevant Gas Day and at least 60 minutes notice will be provided to Users.

- b) Interruptible NTS Entry Capacity held by Users is curtailed (and may subsequently be restored) on a pro rata basis using an Interruptible Scaling Factor(s).
- c) Where National Grid determines that the curtailment of Interruptible NTS Entry Capacity is no longer necessary to manage the Entry Capability Shortfall, Transportation Constraint or Localised Transportation Deficit, then the curtailed Interruptible NTS Entry Capacity rights of users may be restored.

Interruption Methodology

Where National Grid gives an interruptible curtailment notice, the amount of each User's Available Interruptible NTS Entry Capacity (excluding any negative Available Interruptible NTS Entry Capacity) will be determined as:

$$R * (ICF1 * P1 + ICF2 * P2 + \dots + ICFn * Pn) / 24$$

where **R** is the amount of the User's original Available Interruptible NTS Entry Capacity for the Day; and where for each interruptible curtailment notice (from 1 to n) given in respect of the Aggregate System Entry Point and the Day:

ICF is the interruptible curtailment factor, and

P is the period in hours from the curtailment effective time until the end of the Gas Flow Day or (if earlier) the curtailment effective time of a subsequent

Overruns

If for any reason the quantity of gas delivered by a User to the Total System at an Aggregate System Entry Point on any Day exceeds the User's aggregate Available NTS Entry Capacity (determined as Fully Adjusted), the User shall pay a charge ("System Entry Overrun Charge") in respect of NTS Entry Capacity at that Aggregate System Entry Point on that Day in accordance with UNC (ref TPD B2.12).

8. Nominations & Allocations

ROI Nomination Rules:

"Implied Nomination Flow Rate" or "INFR" means the rate (in kWh) at which a Nominated Quantity or Renominated Quantity is deemed to be delivered to or offtaken from the Transportation System on a Day. An INFR will apply to Reverse Flow nominations with a certain quantity x deemed to have flow after a time t in accordance with the INFR.

Arrangements

Under this proposal Gaslink will receive the Shipper Forward Flow Nominations from the Moffat Agent and also receive the Irish Shipper Virtual Reverse Flow Nominations. Gaslink will net off the Nominations to establish the settings for the physical flow through the interconnector (total commercial forward requested EODQ minus total commercial reverse requested EODQ equals physical flow schedule for the day).

National Grid will treat GB Shipper Forward Flow Nominations as UNC exit nominations (as today) and Gaslink will treat Irish Shipper Forward Flow Nominations as Code of Operations entry nominations (as today).

National Grid will treat GB Shipper Virtual Reverse Nominations as UNC entry nominations and the Irish Transporter will treat Irish Shipper Virtual Reverse Flow Nominations as Code of Operations exit nominations.

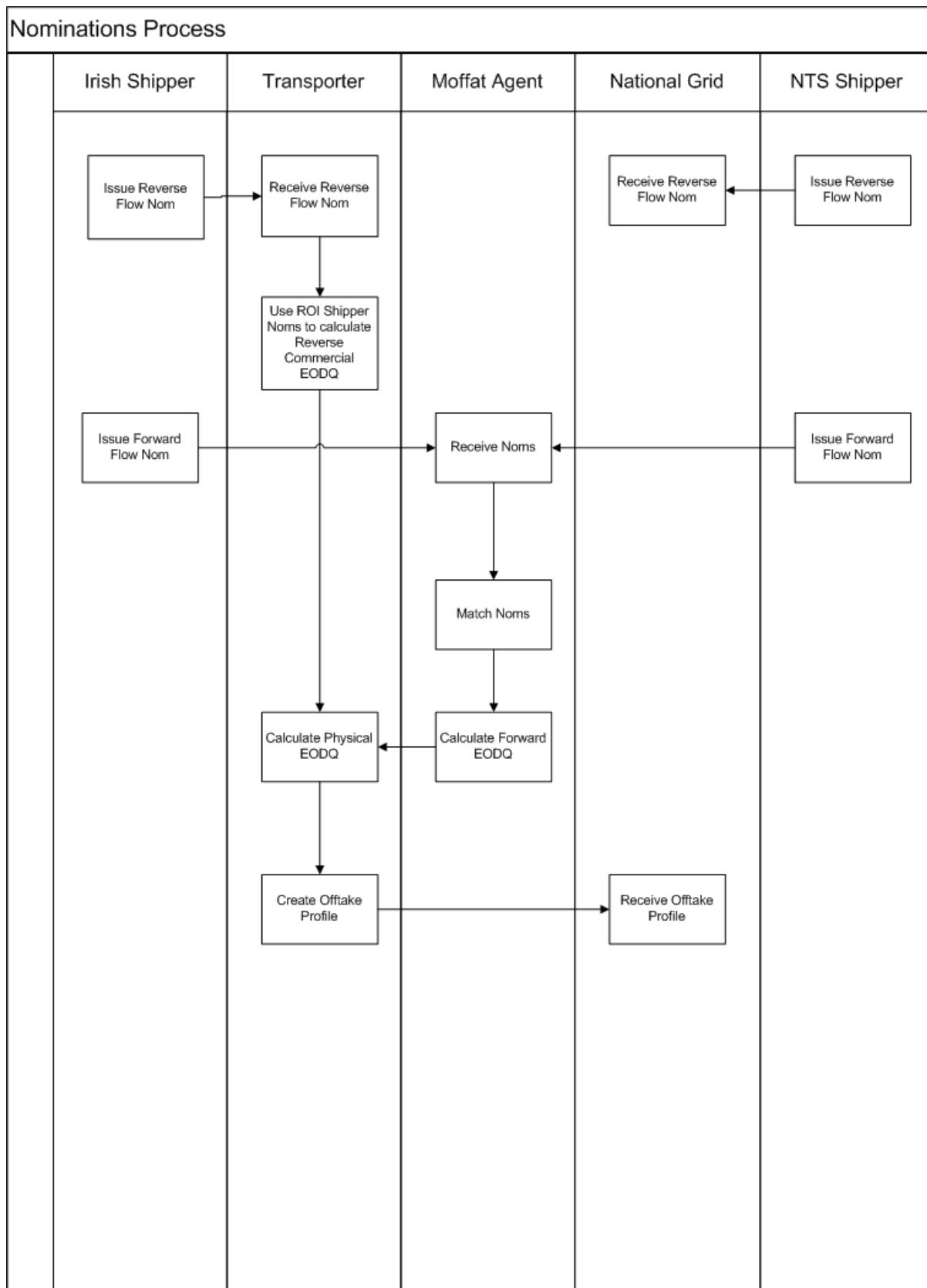
Matching for virtual reverse flows will not be carried out and it will be a matter for the Shippers to liaise with each other to achieve a match. Gaslink will provide the aggregate forward and reverse EODQs and the OPN to National Grid.

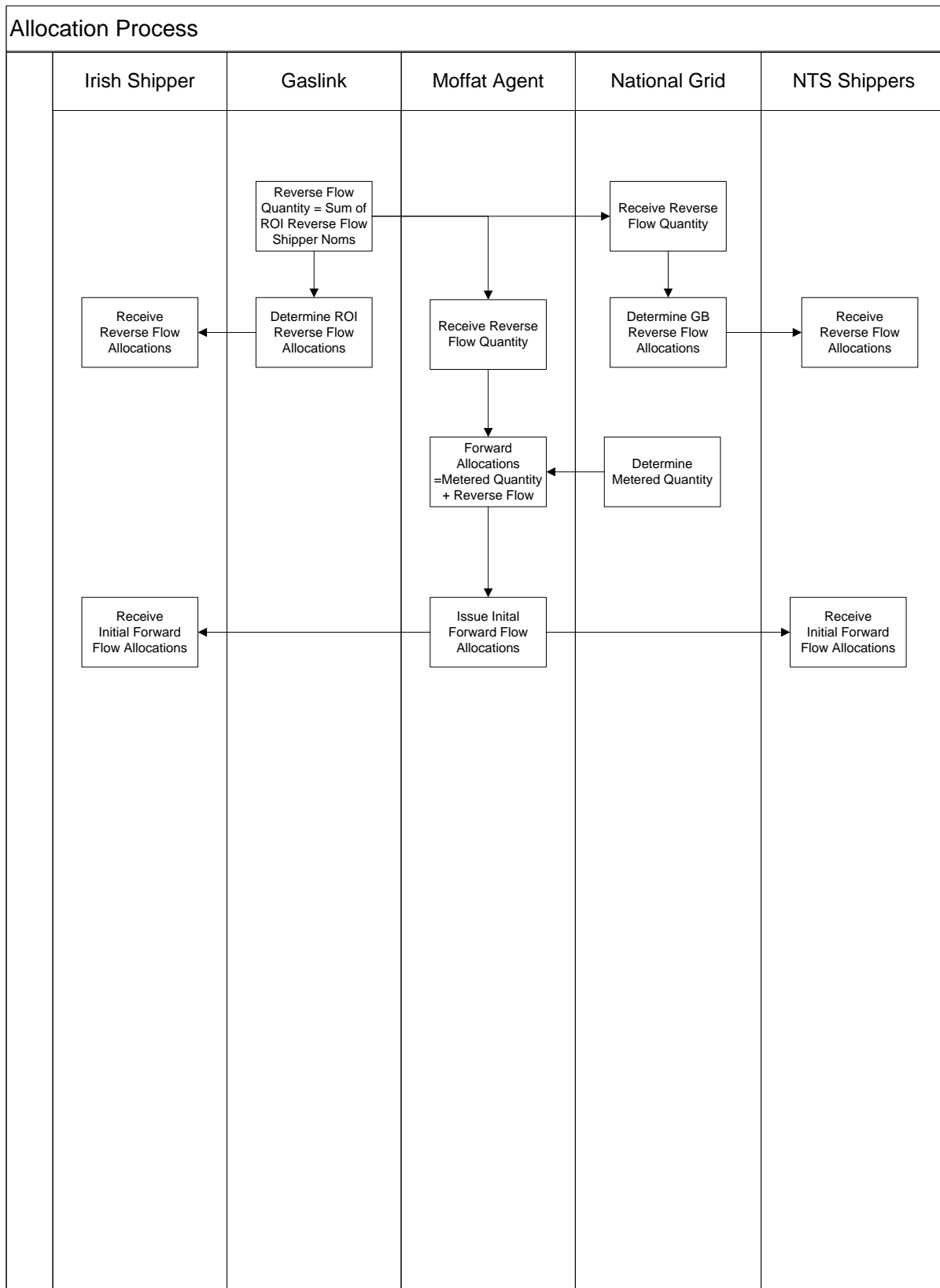
In the event that Agency Arrangements are not in place then National Grid will apply UNC TPD Section E and in the absence of any UNC Input Nominations will set reverse flow allocations at zero. Gaslink will allocate whole to Irish Shipper Reverse Flow nominations.

Information communications between the Irish Transporter and National Grid for this interim service (including Exit Profile Notices/OPNs and end of day quantities) will be via manual fax. National Grid will continue however, with the development of an electronic data exchange system as part of future requirements.

A variation of this proposal may be for the OPN Agent to remain in place but with changes to contractual arrangements to accommodate both the forward and reverse commercial flows.

Flow Chart:





Modification of Agreements

For this option the following deliverables will need to be modified:

Doc. No	Document	Changes to include
1	Moffat Administration Agreement	Issue Forward EODQ to Gaslink (formally OPN Agent)
2	Code of Operations	<p>Create addendum for Reverse Flow Default Nomination and Allocation arrangements.</p> <p>Receive Forward Flow EODQ from Moffat Agent & Calculate EODQ.</p> <p>Create Offtake/Exit Profile Notice</p> <p>Inform National Grid of Offtake/Exit Profile</p>
3	Uniform Network Code	Receive Reverse Flow Noms & prepare and issue list to Transporter – change would be through a variation to the UNC 0352 code modification proposal.
4	Connected Systems Agreement	<p>Default/Interim - TSOs carry out basic Virtual Reverse Flow Allocation service if agents do not</p> <p>Default – National Grid receives Offtake/Exit Profile Notice from Gaslink</p> <p>Add System Entry Point (SEP)</p>
5	Operational Profile Notice Agreement	OPN Agreement may become redundant
6	CSEP Ancillary Agreement	<p>Default/Interim – transporters carry out basic Virtual Reverse Flow Allocation service if agents do not</p> <p>Recognise Connected Systems Point as a SEP</p> <p>Incorporate default provision for Gaslink to submit the OPN.</p>

Doc. No	Document	Changes to include
7	IT Systems	Possible enhancement to change from fax/telephone based TSO/TSO communication to a limited shared electronic information service although this will not be in place during 2011 and is not a requirement to enable the processes to operate successfully. GTMS module

Benefits:

- Represents the quickest route to implementation (in the absence of a shipper agent solution) - Arrangements can be progressed by Gaslink & National Grid
- Simple solution - Extensive systemisation not required due to default allocations
- Meets EU Requirements
- Minimal impact on current forward flow arrangements – therefore low risk from a security of supply point of view
- Relatively low cost to implement and operate

Disadvantages:

- Risk – Subject to an MAA change, although this would be a very minor amendment when compared to other alternatives
- Sub-optimal from a user perspective as it uses a default rule for requested EODQs
- Using resources (Spending money and time) on an interim solution
- Not an enduring solution⁶

⁶ It is recognised by all parties that in the medium to longer term any enduring solution would need to be fully systemised and incorporate the requirements of the CMP guidelines and future CAM Network Code

9. Impacts

The following design aspects have to be considered to measure the effectiveness of the proposed Virtual Reverse Flow service at Moffat.

Consideration	Impact
Compliance with 2 nd Energy Package	Compliant
ROI Shipper Impact	<p>INFR for forward flow must be implemented (Section 1.2.5 (g) of Code of Operations). Currently this rule is relaxed on the GTMS system.</p> <p>Shipper requirement to monitor nominations and actual flow rates such that they are reflective of end of day requirements.</p>
European 3rd Package Requirements	<p>Backhaul capacity offered at least on an interruptible basis</p> <p>ACER CAM Framework Guidelines states that interruptible procedures are to be aligned. Aligned yet to be fully defined. A bundled interruptible product is not required.</p> <p>Coordination on interruptions are as per Framework Guidelines</p> <p>Auctions v FCFS will need to be reviewed when European Capacity Network Code is passed through comitology.</p> <p>Within day Interruptible capacity may be required</p>
Ensure forward flows operate correctly as 95% of gas used in ROI comes through this point	Condition met
Existing Moffat Arrangements	Remains in place
Regulatory concerns – Regulatory and Governance concerns	Regulatory control over Reverse Flow Arrangements
Efficiency and Economy	May be deemed inefficient as it is only an interim solution, but this represents the most

	efficient way of implementing a solution by Oct 2011 and will provide valuable experience that will assist and inform the development of enduring solutions
CAG	Monitor developments
Tariff design	Gaslink – Priced to reflect the risk of interruption
Simplicity and transparency of the design	Condition met
Ability to implement by Oct 2011	Can be introduced in tight timeline
ROI/GB Shipper impact	Extra service available. Only default matching.

10. Schedule

The implementation date for the Virtual Reverse Flow service is 1st October 2011. National Grid and Gaslink are working on a combined detailed project plan.

11. Next Steps

- Gaslink to issue revised business rules and National Grid to progress code modification proposal.
- This document has been primarily released for information purposes. Significant comments can be made on the document (specifically on the two issues relating to the product availability options and the tariff proposals) and should be submitted by Thursday 21st July.
- This arrangement will form the service to be in place on 1st October 2011. Agency arrangements are currently being developed in a parallel process. If the Moffat Shippers agree upon alternative arrangements that are acceptable to TSOs & NRAs these can be implemented and the processes described in this paper will revert to a default arrangement.
- Draft and finalise the Modification of Agreements list in Section 7.