



# Annex A12.03 Baseline Obligated Capacities Report December 2019

As a part of the NGGT Business Plan Submission

**nationalgrid**

# Summary

This report proposes reductions to capacity baselines at two entry points to commence at the start of RIIO-2.

The proposals are to reduce:

- St Fergus from 1670.7 GWh/d to 1500 GWh/d.
- Theddlethorpe from 610.7 GWh/d to 0 GWh/d.

No other changes to entry or exit capacity baseline obligations are being proposed.

Other changes to the capacity access regime are being progressed via the Transmission Working Group Mod 705R.

## Section 1 - Introduction

### Purpose

The purpose of this report is to meet Ofgem's requirement for a baseline obligated capacities report, setting out the results of our assessment of the appropriateness of the current levels of baseline obligated entry and exit capacities including any proposals for revisions to baseline capacities.

### Background

Capacity baselines are:

- A licence obligation which sets out what level of firm capacity we must release at each entry and exit point for each gas day.
- Set at a high level that cannot necessarily be met 365 days of year.
- Based historically on the principle that they should closely reflect the maximum theoretical physical capability of the point under peak conditions.

Capacity baselines are a key feature within the commercial regime in the GB gas market. They provide certainty for the market that capacity will be released up to certain level, with a financial risk/reward based incentive scheme that encourages us to release extra capacity to the market if there's a demand for it.

The commercial regime also allows for substitution of capacity away from a point, if it is unused, to another point, in order to allow new connections to take advantage of the existing network infrastructure and to avoid additional investment costs which are ultimately borne by consumers.

The current capacity baselines were set during the Transmission Price Control Review 4, which began in 2008. A conscious decision was made by Ofgem not to review them for the RIIO-1 price control period. Ofgem signalled its intent to request a review of capacity baselines in 2018, and this culminated in a requirement for us to consider whether the current levels of capacity baseline obligations are appropriate as part of our RIIO-2 business plan submission.

### Business plan proposals and how they link to capacity baselines

Our business plan proposals have been created by an assessment of requirements for the asset base associated with our pipelines and compressors, when compared with the range of stakeholder flows in the 2018 Future Energy Scenarios. The network capability metrics show this on a zonal basis. These metrics can be seen in the Network Capability Report Annex A12.02

The level of capacity baseline is an input into analysis of the cost of potential network constraints, and this has been fed into our constraint cost management incentive and the investment planning processes.

If a party wishes to flow at a level which would lead to flows exceeding capacity baselines, it can provide a signal via long term capacity sales. However, the capacity regime was designed for incremental growth, not reducing capacity and there has not been a straightforward way for entry parties to indicate a reduction in capacity needs (exit parties can apply for reductions).

The network capability charts allow us to visualise this, and provide a framework, to complement the existing regime, to facilitate efficient long-term decision making where reductions to capability are the most efficient answer for consumers. This then allows the potential impact of capacity baseline obligations to be considered.

## Key factors considered during assessment of need for change

As a general principle, the capacity baseline obligation should represent the maximum physical capability of the NTS at times of peak flow. The capacity regime was designed for incremental growth, not reducing capacity, and the impact of any reductions are therefore difficult to predict.

Given that we already have a set of capacity baselines, the consequences of reducing them from a level the market is familiar with must be considered in any proposals for change.

If there is a constraint (flows requested by shippers who have bought firm capacity can't be facilitated), there are different ways to resolve the situation. If the issue is short term, we are likely to have to buy capacity back from shippers in order to remove their right to flow gas. The volume of the capacity buy back is the difference between the amount of firm capacity sold and the maximum flow that can be facilitated, irrespective of whether that capacity is being "flowed against".

The price paid to buy back the capacity is determined by the shippers and does not relate to the price paid by them. However, if they are flowing gas using that capacity, the price is likely to be higher than if they are not using that capacity.

If constraints occur on a regular basis, this can lead to a perception of scarcity. This can lead to risk mitigations strategies, incurring costs that are borne by consumers, such as

- Driving higher capacity prices in auctions.
- Buying more expensive gas from other sources/using other entry locations (impact on wholesale prices).
- Discouraging offshore investment.

Therefore, the balance of cost risk for consumers is that of increased constraint costs if baselines are too high, against increased costs to shippers which will be passed onto end consumers if baselines are reduced to a level that causes perceptions of scarcity of capacity.

Other factors to consider are:

- Substitution of capacity has been used to deal with all new customer connections in RIIO-1 that have been progressed to date. Reducing capacity baselines will reduce the potential for substitution.
- The outcome of the ongoing gas transmission charging review will impact the way capacity is bought. We cannot accurately model this behaviour.

In their sector specific document, Ofgem recognised that in any proposals to reduce capacity baselines, we should take account of a reasonable level of headroom on top of physical capability. Any headroom should be justified. We have found it challenging to fully model the impact of different levels of headroom, and hence to evidence what a reasonable level of headroom would be.

We have conducted engagement activities to determine stakeholder views on the potential impact of reductions to capacity baselines. These activities are described further in Annex 12.05 Network Capability Stakeholder Engagement Report.

Please note – the units used for capacity baselines in the Gas Transmission Licence are GWh/d. In this and other related documents we have shown flow levels in mcm/d, because these are the common units that are used in our external publications on flow data. For the rest of this document we will use mcm/d as units to define flows and capabilities. Consistent with the licence, any changes to capacity baselines will be in GWh/d.

## **Other relevant information**

As a result of stakeholder feedback received during engagement on capacity baselines and general access arrangements, we have raised Mod 0705R – NTS Capacity Access Review, which has the following purpose:

- To review the principles and establish long-term strategy for the NTS capacity access regime. Ensuring the regime is appropriate for commercial behaviours experienced today, simplified and adaptable whilst being consistent with relevant obligations. To make recommendations for change and addressing short-term problems in accordance with the long-term ambition.

More detail on this request can be found at this link.

<https://gasgov-mst-files.s3.eu-west-1.amazonaws.com/s3fs-public/ggf/book/2019-10/Request%200705R%20v2.0.pdf>

## **Explanatory note on St Fergus**

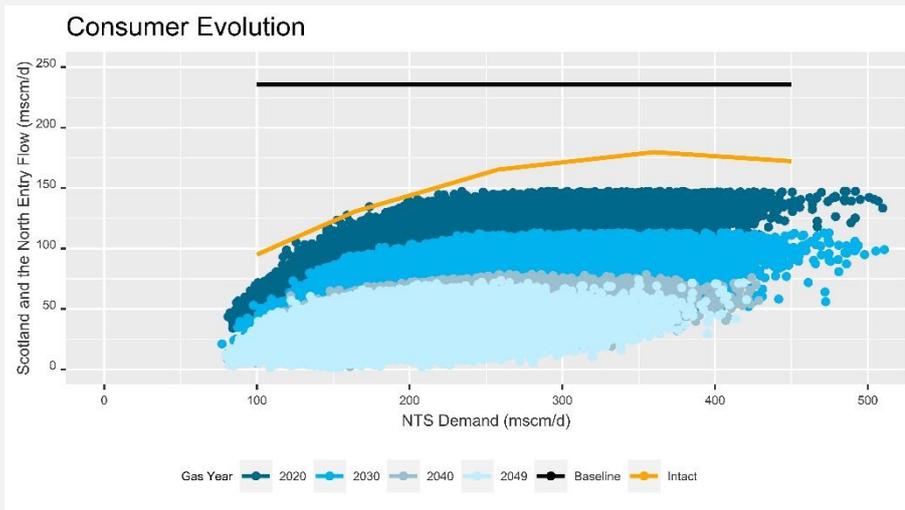
The capacity baseline at St Fergus relates to the ability of the NTS to move gas away from the St Fergus terminal and through the rest of the NTS in order to meet demand elsewhere in the country. The compression required to achieve this is separate to our proposals relating to compression within the St Fergus terminal itself (Chapter 16 – I want you to care for the Environment and Communities), which relate to our contractual pressure arrangements with one third party sub terminal at St Fergus.

## Section 2 – Review of capacity baselines

### Entry Capacity

For entry capacity, we have used a combination of the zonal network capability metrics, compressor fleet supporting information and forecast flows from FES to inform our proposals. The metrics we have developed show the physical capability of the NTS to move gas away from entry terminals.

### Scotland and the North – St Fergus, Teesside and Barrow



This chart includes the entry points at St Fergus, Teesside and Barrow. There is a significant difference between the capacity baseline and the intact capability. Further investigation was required to understand this at each of the individual terminals.

### St Fergus

The physical entry flow capability at St Fergus within the analysis ranges from 125mcm/d to 135mcm/d, depending on assumptions on the level of entry flows at Southern terminals such as Bacton. There is therefore a difference between the physical capability to move gas away from St Fergus and the capacity baseline, which is ~154mcm/d.

The forecast peak level of stakeholder flows is somewhere between 110 and 120mcm/d, depending on which FES scenario is used. This shows that the physical capability of the NTS is broadly at the right level to meet stakeholder needs during the RIIO-2 period, and that going forward the peak level of flow is not likely to increase.

### Key Points

When considering whether to propose a reduction in the capacity baseline at St Fergus, the following factors were considered:

- The capacity baseline at St Fergus is higher than the physical capability and there is no indication that stakeholder flows will reach the current baseline (~154mcm/d) into the future.
- Any constraints are likely to be caused by a combination of planned work and unplanned compressor trips/unavailability. A high capacity baseline in this situation would lead to the potential for higher constraint costs.

- Shippers have expressed concern that reducing the capability baseline will lead to a perception of scarcity of capacity, which could artificially raise capacity prices at St Fergus. This could discourage flows from UKCS or Norwegian parties into St Fergus, which could impact wholesale gas (and therefore electricity) prices and potentially reduce security of supply.
- When the capacity baselines were reduced in the past, clearing prices in capacity auctions at St Fergus increased.
- We have been unable to model shipper behaviour on buying capacity in the charging regime because the outcome is not yet known.
- We have been unable to model shipper behaviour to reducing capacity baselines in these circumstances as there is no recent evidence base.
- The business plan proposals are for us to begin to decommission compressors in Scotland; the units we are proposing to retain are required to deliver the level of physical capability our stakeholders have said they need during RIIO-2.
- Reducing the level of capacity baselines would not impact our business plan proposals for RIIO-2; it will support efficient decisions during RIIO-2 and beyond (e.g. on decommission or derogate decisions for compressors).

We asked stakeholders their views on how much headroom we should leave between the level of physical capability and the capacity baseline; there was no strong convergence of opinions other than a recognition that this is a difficult number to accurately model and justify. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

## Conclusion and proposal

We would not be able to facilitate flows of ~154mcm/d into St Fergus with current market behaviour, and we do not believe there is an appetite from stakeholders for us to do so. We recognise stakeholder concerns that a significant reduction in capacity baselines at St Fergus could have unintended consequences. The absolute level of that reduction is challenging to accurately model and justify.

We believe there is a balance between recognising there is value to consumers in reducing the capacity baseline by reducing costs of constraints both on the day and in our investment planning processes during RIIO-2, and not creating unnecessary perception of scarcity.

*We are proposing an incremental reduction of the capacity baseline at St Fergus, from 1670.7GWh/d (~154mcm/d) to 1500GWh/d (~140mcm/d). This proposal strikes a balance between the different stakeholder views and will allow us to gather data on the impact of this type of change, which will help inform assessment of any future proposals on reductions to capacity baselines.*

## **Barrow**

The Barrow entry point connects to a pipeline which has other customers connected to it, and which feeds into the NTS at Lupton (in Cumbria). The capacity baseline is 30.9mcm/d. Peak flows range from 5mcm/d to 17mcm/d in the different FES scenarios.

### **Key Points**

- Reduction of the capacity baseline at Barrow would not have an impact on our RIIO-2 investment plans, as the pipeline it connects to is required as long as there is any potential entry flow, and to facilitate other customer's needs. The pipelines and compressors in the area of the NTS that Barrow connects to are also still required for general gas transportation purposes.
- Forecast levels of flows from Barrow are at a level which indicates that the likelihood of constraints is very low. There is no cost benefit in reducing the capacity baseline.
- The capacity at Barrow has been used for substitution to facilitate other customer connections.
- The area of the NTS it is connected to is an area where shale gas has been explored (future exploration and development is impacted by Government policy on shale).
- It is feasible that other customers may wish to connect at the Barrow terminal or along the pipeline.
- Reducing the level of capacity to exactly meet the maximum forecast flow would remove the ability of the capacity to be used in the substitution process.

We set out these key points to stakeholders and explained that we did not see a strong case to reduce the capacity baseline at Barrow as a result of this. Stakeholders were broadly supportive of this view. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

### **Conclusion and proposal**

We are not proposing any reduction to the capacity baseline at Barrow.

## Teesside

The Teesside entry point connects to a pipeline which has other customers connected to it, and which feeds into the NTS at Cowpen Bewley. The capacity baseline is 40.5mcm/d. Peak flows range up to 35mcm/d in the different FES scenarios.

### Key Points

- Forecast levels of flow are close to the level of capacity baseline.
- Reduction of the capacity baseline at Teesside would not have an impact on our RIIO-2 investment plans, because the pipeline it connects to is required as long as there is any potential entry flow, and to facilitate other customer's needs. The pipelines and compressors in the area of the NTS that Teesside connects to are also still required for general gas transportation purposes.
- Reducing the level of capacity to exactly meet the maximum forecast flow would remove the ability of the capacity to be used in the substitution process.

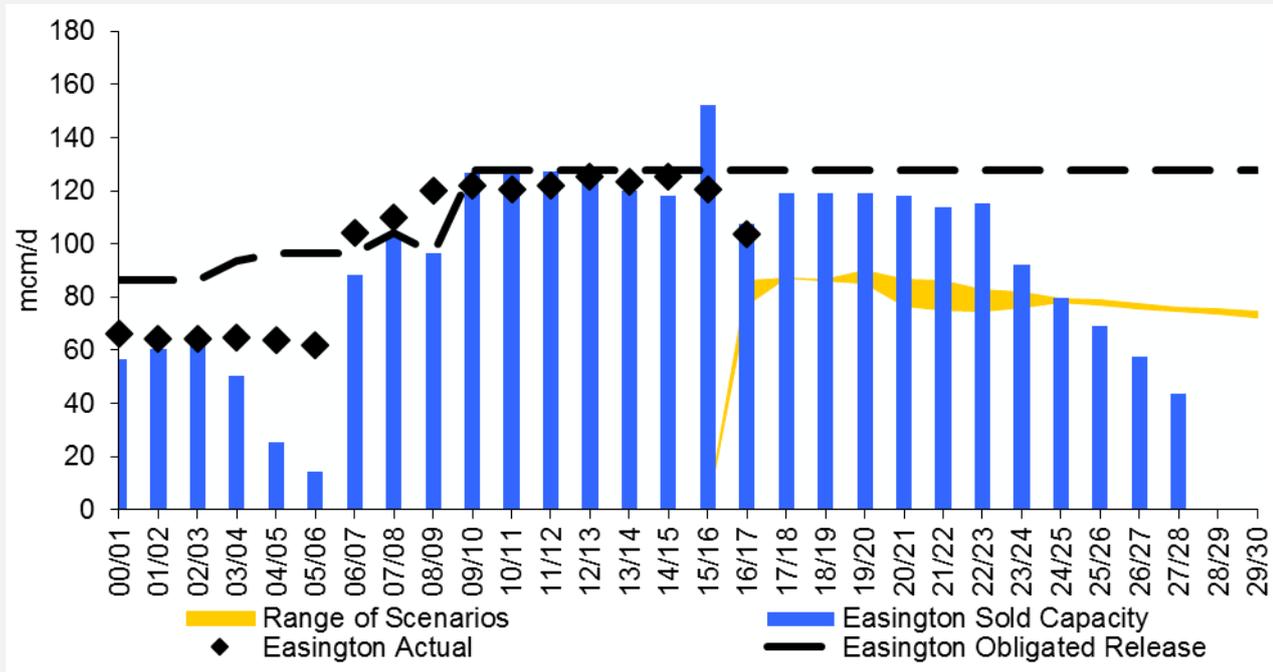
We set out these key points to stakeholders and explained that we did not see a strong case to reduce the capacity baseline at Teesside as a result of this. Stakeholders were broadly supportive of this view. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

### Conclusion and proposal

We are not proposing any reduction to the capacity baseline at Teesside.

## Easington

The chart below (from GTYS 2018) shows the historic peak flows (labelled Easington Actual), range of flows, capacity sales and level of obligated capacity at Easington.



### Key Points

- Due to the recent cessation of flows at Rough, the forecast flows at Easington are less than the capacity baseline.
- Reduction of the capacity baseline at Easington would not have an impact on our RIIO-2 investment plans, as the pipelines and compressors in the Easington area of the NTS connects to are also still required for general gas transportation purposes.
- Reducing the level of capacity to exactly meet the maximum forecast flow would remove the ability of this capacity to be used in the substitution process and could limit the availability of capacity to other parties at Easington.

We set out these key points to stakeholders and explained that we did not see a strong case to reduce the capacity baseline at Easington as a result of this. Stakeholders were broadly supportive of this view. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

### Conclusion and proposal

We are not proposing any reduction to the capacity baseline at Easington.

## **Theddlethorpe**

The terminal at Theddlethorpe has closed but our licence still contains a capacity baseline of 610.7 GWh/d (~55mcm/d). The capacity relates to two dedicated pipes from Theddlethorpe to Hatton, and further pipelines and compressors elsewhere in the NTS.

### **Key Points**

- Some interest has been expressed by potential future customers to use this infrastructure
- Our business plan proposes:
  - isolating the two pipelines to Hatton and purging them with nitrogen.
  - demolishing the existing terminal and replacing with a new manifold to facilitate future connections if required
- We will not be able to deliver any flows of natural gas on a day to day basis from Theddlethorpe as a result of these plans; however, some capability will remain available for future customers

We tested our view that the capacity baseline should be reduced to zero with stakeholders., We received feedback that while this was a logical suggestion, it was important to retain visibility that the capacity could be triggered, and it was suggested that we explore the concept of dormant or mothballed capacity to facilitate this. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

We have included further investigation of the dormant capacity concept as part of the scope of Transmission Workgroup 705R.

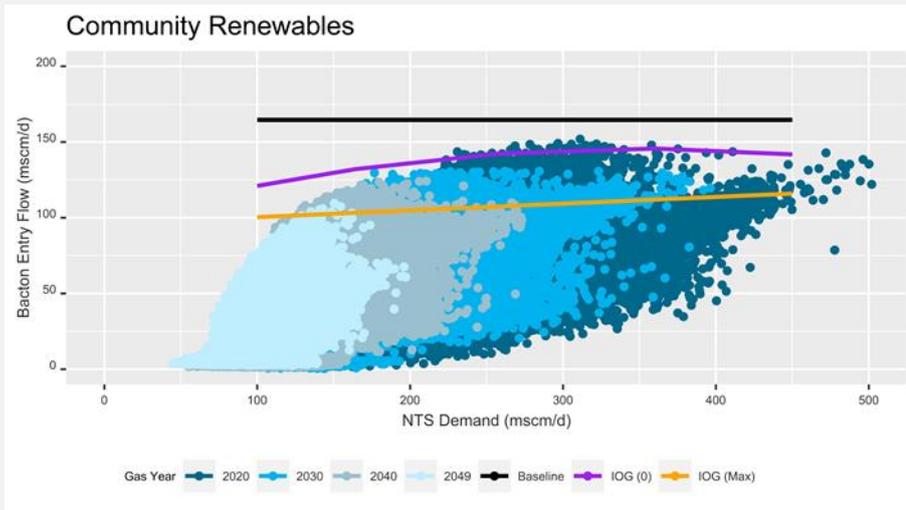
### **Conclusion and proposal**

We propose to reduce the baseline capacity at Theddlethorpe from 610.7 GWh/d to zero and to progress the concept of dormant or mothballed capacity under Transmission Workgroup 705R.

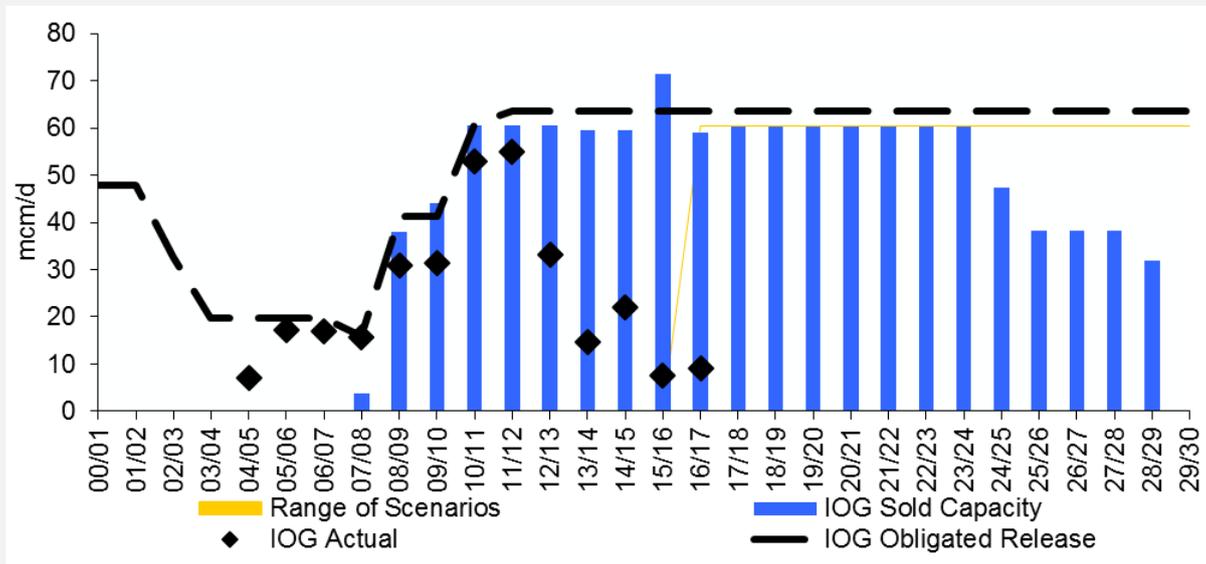
## Bacton and Isle of Grain

The Bacton capacity baseline is made up of separate UKCS and interconnector baselines.

The following charts show the interaction between entry flows at Bacton and entry flows at the Isle of Grain. The purple line shows the maximum flow from Bacton with no flow from the Isle of Grain terminal; the orange line shows the maximum flow from Bacton with maximum flow from the Isle of Grain terminal.



The Isle of Grain has the physical capability to flow up to its full, and the local NTS has the capability to deliver against this obligation. Forward capacity sales at Isle of Grain are high. The chart below, which is from GTYS 2018, shows this.



Note that the range of flows on this chart is a flat line, because it reflects the level of capacity bookings. There will be lower flows from the Isle of Grain at times, with the potential for them to ramp up to full load at short notice.

## **Key Points**

- There is a small amount of headroom between the aggregate of the UKCS and interconnector capacity baselines at Bacton and the physical capability of the NTS when the Isle of Grain flows at full capability, and more headroom when the Isle of Grain is not flowing at all.
- Capacity at Bacton is complex due to arrangements and requirements under the EU code.
- There are occasions where UKCS capacity sells out and we are requested to release non obligated capacity in the short term.
- Isle of Grain has the capability to flow at maximum output at any point; FES scenarios show maximum or minimum flow required.

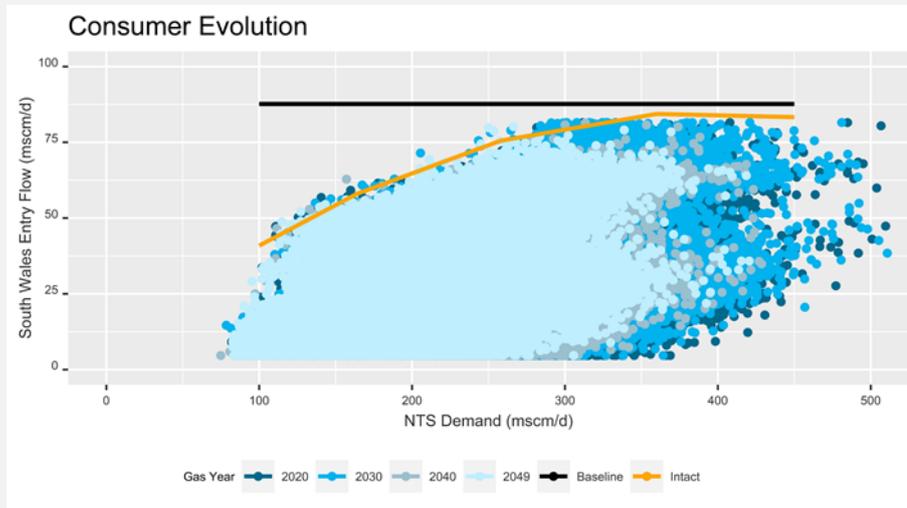
We set out these key points to stakeholders and explained that we did not see a strong case to reduce the capacity baseline at Bacton or Isle of Grain as a result of this. Stakeholders supported this view. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

## **Conclusion and proposal**

We are not proposing any reduction to the capacity baselines at Bacton or Isle of Grain.

## Milford Haven

The chart below shows an example of physical capability, capacity baseline and potential stakeholder flows from Milford Haven.



### Key points

- The chart is one of many that show that the level of physical capability is broadly at the level of the capacity baseline.
- We are proposing to invest in replacement compression at Wormington in order to retain our ability to deliver to the level of capacity baseline.
- There is currently a PARCA application in progress which could result in an increase to capacity baselines at Milford Haven.

We set out these key points to stakeholders and explained that we did not see any case to reduce the capacity baseline at Milford Haven. Stakeholders supported this view. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

### Conclusion and proposal

We are not proposing any reduction to the capacity baselines at Milford Haven.

## Exit capacity

Exit capacity obligations can be summarised in the following table.

	Baseline capacity (mscm/d)	Winter peak flow (mscm/d)
DN	501	370
Interconnectors	109	33
Storage	99	0
Power Stations	179	118
Industrial	19	6
Total	907	528

The difference between capacity baselines at peak and the winter peak flow in the network analysis can be explained as follows:

- Gas Distribution Networks – this represents an element of diversity in which offtakes the GDNs can use.
- Interconnectors to mainland Europe are not expected to export during the winter peak. There have been occasions when exports have been seen during the winter months. The recent introduction of exports via the BBL link (albeit on a non-firm basis) may change this behaviour and it will be kept under review.
- There is an assumption that storage sites will not take gas off the NTS during the winter peak.
- We do not model all power stations taking gas on a 24/7 basis during winter peak; our experience is that they will profile, and this is taken into account in the analysis. However, on an individual basis they could take gas for 24 hours.
- Industrial sites also tend not to take gas on a 24/7 basis at winter peak.

During our stakeholder engagement, and mainly via one to one meetings or feedback at industry meetings, views were expressed that parties wished to have access to existing capacity that exists within the physical capability of the NTS, by creating easier processes and more transparency on where capacity existing in the short term.

Stakeholders also expressed concerns that if exit capacity baselines were reduced at sites that were no longer flowing (such as Rough or Dynevor Arms) then other parties would not be able to access that capacity via the substitution process. More information on this engagement can be found in the Network Capability Stakeholder Engagement Annex (A12.05).

These concerns have all been fed into Transmission Working Group 705R.

We tested a view with stakeholders that as a result of this feedback and the ongoing work in 705R, we were minded not propose any reductions in exit capacity baselines. Stakeholders were broadly supportive of this approach.

## Conclusion and Proposal

We are not proposing any reductions to exit capacity baselines.

## **Storage**

Storage sites have entry and exit capacity. We have not specifically engaged on storage sites but the capacity they hold will be included in the discussion on 705R.

### **Section 3 – Summary and next steps**

We are proposing reductions in the entry capacity baselines at St Fergus and Theddlethorpe.

We have listened to feedback from stakeholders who have told us that there is scope to make capacity processes simpler and asked us to explore different ways to access the existing capability of the network by reviewing the way capacity is made available. We have raised UNC Review 705R and will lead this review via established industry processes to enable the right solutions to be proposed going forwards.