UNC 0870: Amendments to Wobbe Index & Calorific Value Lower Limits at NTS System Entry Points

04 April 2024

Background: GSMR

- HSE published their *Conclusions of the GS(M)R Review* in March 2023 which contained a ***Regulatory Impact Assessment***. The review came into legal effect in ***The Gas Safety (Management) (Amendment) Regulations 2023***
- ICF and Soot Index replaced with a **Relative Density limit of 0.7** (*already implemented*)
- Reduced the lower limit for **Wobbe Index from 47.2 MJ/m^3 to 46.5 MJ/m^3** (*from April 2025*)
- Implementation at individual NTS entry points is on a voluntary basis
- Several NTS entry points have requested a reduction:
  - Bacton (Perenco)
  - Barrow (Spirit Energy)
  - Teesside (Px)
  - St Fergus (NSMP)
  - Grain LNG

Wobbe Limit Implementation Options

Do Nothing

- GSMAR does not compel NGT to agree a reduction in the Wobbe Index lower limit.
- Several DFOs have indicated they wish to reduce the lower Wobbe Index limit.

Blanket Mod (All DFOs)

- GSMAR does not compel NGT to agree a reduction in the Wobbe Index lower limit.
- Not all DFOs have indicated they wish to reduce the lower Wobbe Index limit.

Group Mod

- Several DFOs have indicated they wish to reduce the lower Wobbe Index limit.
- More efficient (cost & resource) than separate mods for each DFO

GSMAR Implementation: Modification Proposal

Purpose of Modification:

To enable implementation of a reduction in the lower limit for Wobbe Index and Calorific Value at some NTS System Entry Points following the Government's decision to reduce the lower Wobbe limit in UK legislation

NTS System Entry Point	Current Wobbe Index lower limit (MJ/m^3)	Amended Wobbe Index lower limit (MJ/m^3)	Current CV limit (MJ/m^3)	Amended CV limit (MJ/m^3)
Bacton Perenco	47.2	46.5	No Change	
Barrow	47.2	46.5	No Change	
Grain LNG	47.2	46.5	36.9	36.0
St Fergus NSMP	47.2	46.5	36.9	36.0
Teesside Px	47.2	46.5	36.9	36.0

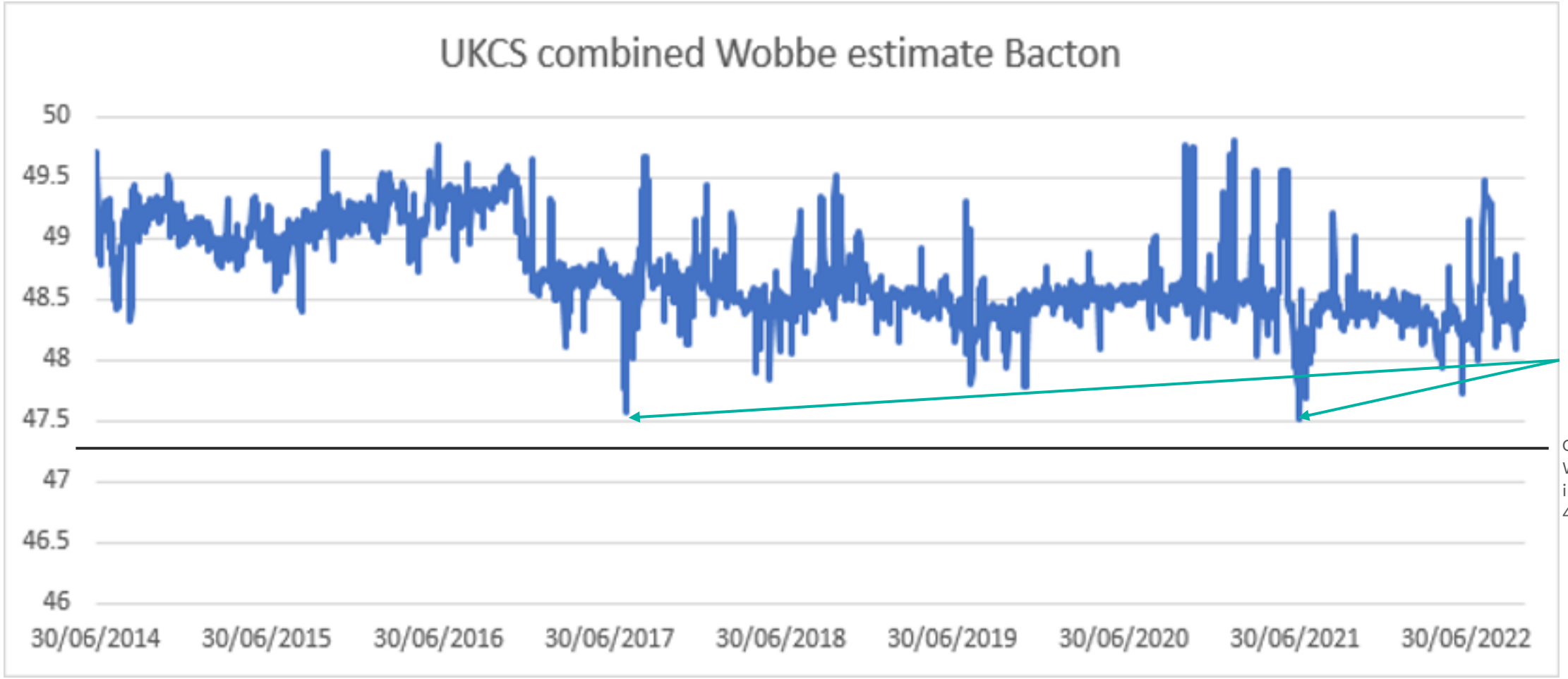
GSMAR Implementation: Interconnectors

- Implementation of a 46.5 MJ/m^3 lower Wobbe limit at the Bacton Perenco System Entry Point could, under certain flow configurations, find its way directly to interconnectors contracted at minimum of 47.2 MJ/m^3 when they are in export mode
- Both Bacton Interconnectors have an entry and exit lower limit for Wobbe of 47.2 MJ/m^3 which also applies at the Belgian (Zeebrugge) and Dutch (Balgzand) end of each pipeline
- Could be a barrier to cross border flow with the EU - alignment is essential for Interconnector and BBL to avoid the risk of stranded gas in their pipelines
- Networks of other NW EU TSOs in France and Germany could also be impacted

Risk Analysis

- NGT has calculated potential co-mingled Wobbe Index at Bacton assuming:
    - Perenco deliver gas at a Wobbe of 46.5 MJ/m^3
    - SEAL deliver forecast volumes at the low end of their forecast Wobbe range
    - Shell deliver actual historical volumes for the past 8 years but at a low case Wobbe (5th percentile of Shells' actual Wobbe range over this period)
    - No NTS gas is being 'pulled' towards Bacton

GSMAR Implementation: Interconnectors



Analysis:

•Given these assumptions, historical analysis shows that even on the lowest co-mingled Wobbe days **there would still be 0.3MJ/m^3 of headroom** - Lowest combined **Wobbe remains above the current lower limit of 47.2 MJ/m^3 at all times.**

• Little difference in Wobbe compared to historical flows data

• Future analysis consistent with historical analysis

Options

The risk therefore appears low but we have been working with relevant TSOs on options if it did occur

1. TSO co-mingling
2. Application of constraints
3. Reduction in / harmonisation of lower Wobbe limit between TSOs in Interconnection Agreements at Bacton, Zeebrugge and Balgzand (and beyond)

- **We are working towards 'harmonisation' at 46.8 MJ/m^3 with NW EU TSOs and interconnector operators to reduce the risk to as low as reasonably possible**

GSMAR Implementation: Modification Proposal

Interconnectors

Alignment is essential for BBL and Interconnector to avoid the risk of stranded gas in their pipelines therefore we propose amending the gas quality parameters contained within the Network Entry Provisions and Network Exit Provisions that are in place with BBL and Interconnector regarding the interconnection Points at Bacton

Interconnection Point	Current NTS Entry Wobbe Index lower limit (MJ/m^3)	Amended NTS Entry Wobbe Index lower limit (MJ/m^3)	Current NTS Exit Wobbe Index lower limit (MJ/m^3)	Amended NTS Exit Wobbe Index lower limit (MJ/m^3)
BBL	47.2	46.8	47.2	46.8
Interconnector	47.2	46.8	47.2	46.8

GSMAR Implementation: Gas Quality Data Transparency

- Some of our exit stakeholders (esp power generation) have requested that additional gas quality data is needed to enable them to cope with a wider Wobbe Index range
- They are unsure whether to invest in plant adaptation because of uncertainty about whether wider contractual specs at NTS entry will result in a wider range of gas quality at their offtakes
- One of the potential benefits of enhanced gas quality data transparency is that it would reduce concerns with GSMAR changes for customers that are sensitive to gas quality variation
- We have previously sought to address this by exploring the potential for gas quality data publication at NTS entry points and encountered two main barriers:

    1. Some terminal operators have regarded gas quality data as commercially confidential
    2. Such data may be of little use in determining the likely gas quality at any particular exit point due to comingling of different sources within the network

Gas Quality Data Transparency: Proposed Solutions

- We recognise that agreeing a wider contractual Wobbe range with some DFOs will be of concern to some of our exit stakeholders, particularly those who operate gas fired generation plants

- We wish to discuss potential and proportionate measures that could be deployed to increase gas quality data transparency to enable relevant exit stakeholders to manage any perceived increased operational risks

1. **Publish CV and Wobbe data measured at GDN offtake points**

    - Consent needed from Gas Distribution companies

‘backward looking’ view

2. **Produce [annual] ‘heat maps’ of where low Wobbe gas might feature**

    - Needs forward view of delivery volumes and Wobbe Index
    - Commitment to provide this from entry operators (included in NEA?)

‘forward looking’ view

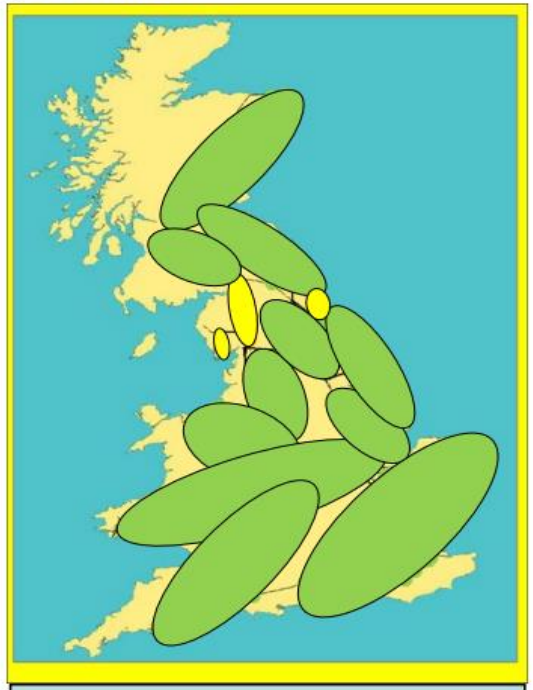
Are there any other Gas Quality Data Provision related GSMAR issues or ideas that should be considered?

‘Heat Map’ Example

Scenario 1

Barrow at 46.5 MJ/m^3, (lower volume @46.8 MJ/m^3 for the summer scenario) Bacton Perenco - Cygnus only flowing at 46.5 MJ/m^3, Teesside at 47.12 MJ/m^3, and St Fergus NSMP at 46.9 MJ/m^3, all other entry points flowing at their historical average Wobbe.

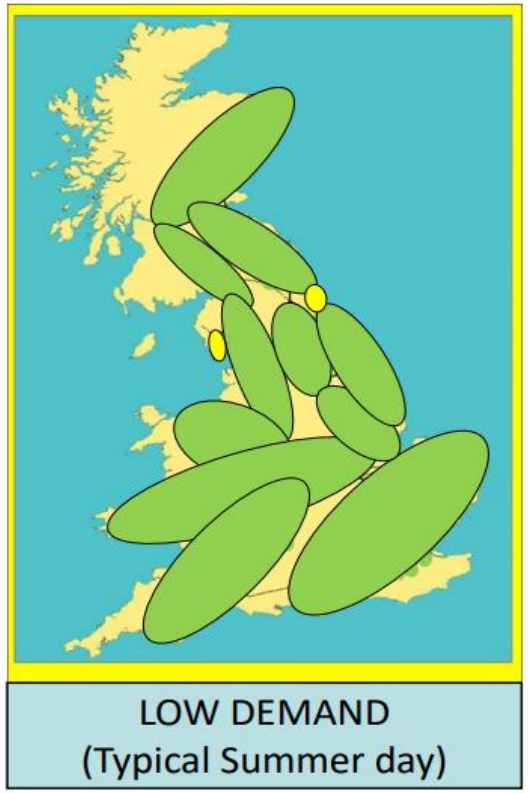
Nodes below 47.2 MJ/m3
Lupton
ICI Avecia
Keld
Philips Tees
Wetheral
Melkinthorpe
BOC Teesside
BASF
Barrow Black Start



HIGH DEMAND
(Typical Winter day)

46.5 – 47.2 MJ/m3

> 47.2 MJ/m3



LOW DEMAND
(Typical Summer day)

Nodes below 47.2 MJ/m3
ICI Avecia
Philips Tees
BOC Teesside
BASF
Barrow Black Start

Further information and examples of heat maps are available here

GSMAR Implementation: High Level Plan

Activity	Process Step	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25	Apr-25
UNC Modification	Initial industry engagement	★															
	Raise UNC enabling Mod			★													
	UNC Panel meeting				★												
	UNC workgroup meetings				★	★	★	★	★	★							
	Workgroup report to UNC Panel									★							
	UNC Mod consultation period									→	→						
	Final Mod Report to UNC Panel											★					
	UNC Mod - Ofgem decision													★			
Site implementation	Prepare NEA changes												→	→	→	→	
	Execute NEA changes															★	
	Operational implementation activities														→	→	
Interconnectors	GTS raise spec change proposal to Dutch ministry		★														
	Engagement / consultation				→	→	→	→	→	→	→	→	→	→			
	Law change effective													★			
	Execute changes to interconnection agreements															★	
	Ofgem approval																★

Thank you

national gas transmission