



POTENTIAL CONSTRAINTS ON GAS FLOWS FROM THE ZEEBRUGGE REGION

European Gas Quality
Workshop
London
18 November 2009

AGENDA



#01 INTRODUCTION

#02 GAS QUALITY : A GROWING AND IMMINENT CONCERN

#03 FLUXYS NETWORK ACHIEVEMENTS

#04 SUPPLY TO UK : SCENARIO ANALYSIS

#05 CONCLUSION

INTRODUCTION (1)

- GS(M)R 1996 – Schedule 3 prescribes for the Wobbe Index (WI)
 - An upper limit of 51,41 MJ/m³ (52,85 in an emergency)
 - A lower limit of 47,2 MJ/m³ (46,5 in an emergency)
- Those values are derived from the Dutton's diagram (*)
- The UK WI upper limit is much lower than
 - The EASEE-gas recommendations (54 MJ/m³)
 - Most continental specifications (Fluxys: WI max 53,91 MJ/m³)

(*) cf. B.C. Dutton: "A new dimension to gas interchangeability".
The Institution of Gas Engineers, Communication 1246.

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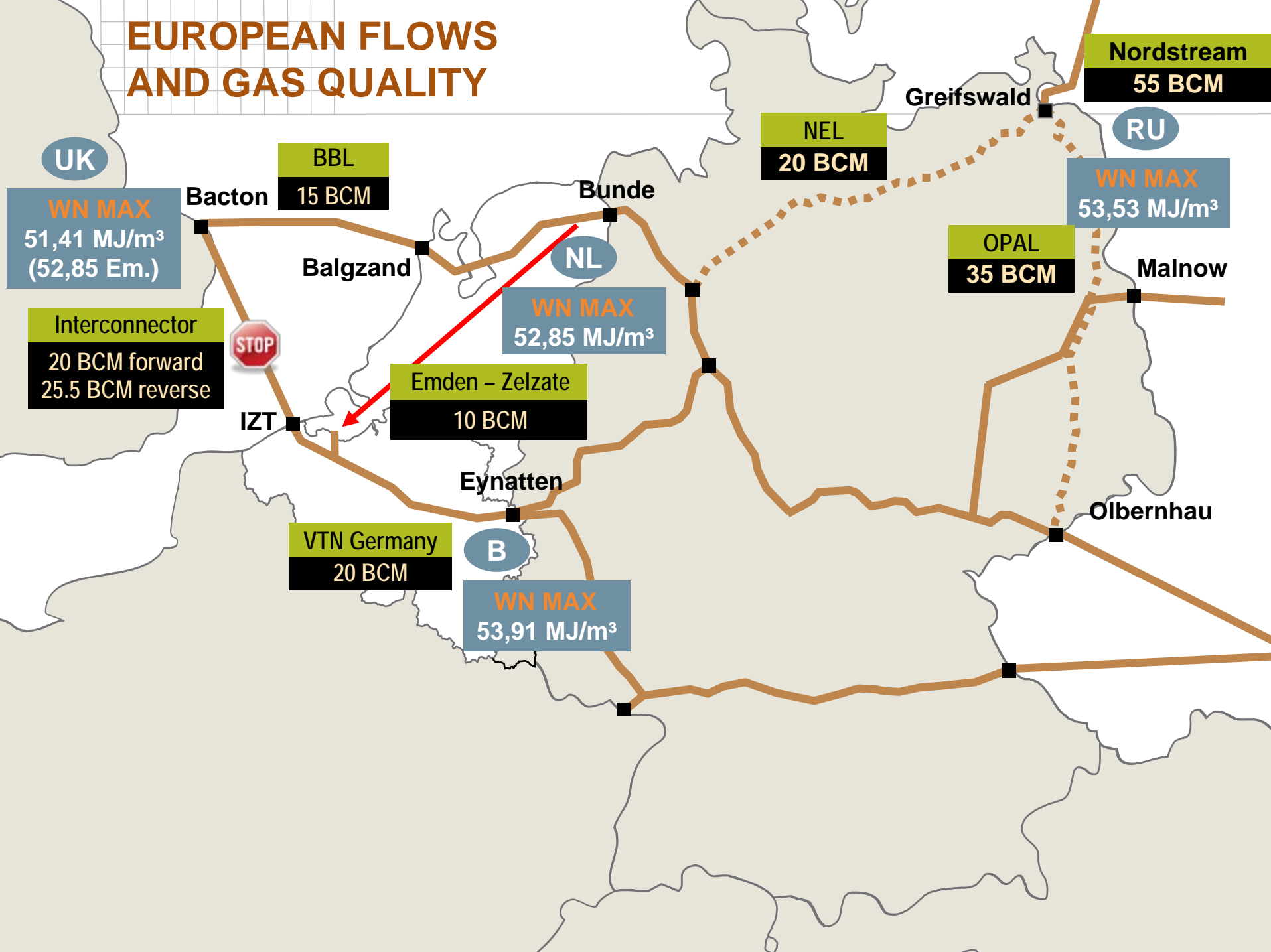
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GAS QUALITY : A GROWING & IMMINENT CONCERN (1)

- Interoperability issues already exist between the Continent and the UK, but to date the gas quality problem has been invisible to the market, as Fluxys has always managed to keep the gas within the GS(M)R limits
- **With additional gas outside of the UK GS(M)R imminently arriving, and the increased interconnectivity of the networks, technical limits will have been reached at which Fluxys can optimise gas quality**, meaning that the UK won't any longer be in the luxurious position it has been to date of receiving GS(M)R specifications gas
- **The clock is ticking:** Nord Stream volumes will be delivered in 2011/2012. Preliminary samples indicate a WI incompatibility with GS(M)R, in line with ILEX assumptions back in 2003

EUROPEAN FLOWS AND GAS QUALITY



UK

WN MAX

51,41 MJ/m³
(52,85 Em.)

Interconnector

20 BCM forward
25.5 BCM reverse

STOP

Bacton

BBL

15 BCM

Balgzand

Bunde

NL

WN MAX

52,85 MJ/m³

Emden - Zelzate

10 BCM

Eynatten

B

WN MAX

53,91 MJ/m³

VTN Germany

20 BCM

NEL

20 BCM

Greifswald

Nordstream

55 BCM

RU

WN MAX

53,53 MJ/m³

OPAL

35 BCM

Malnow

Olbernhau

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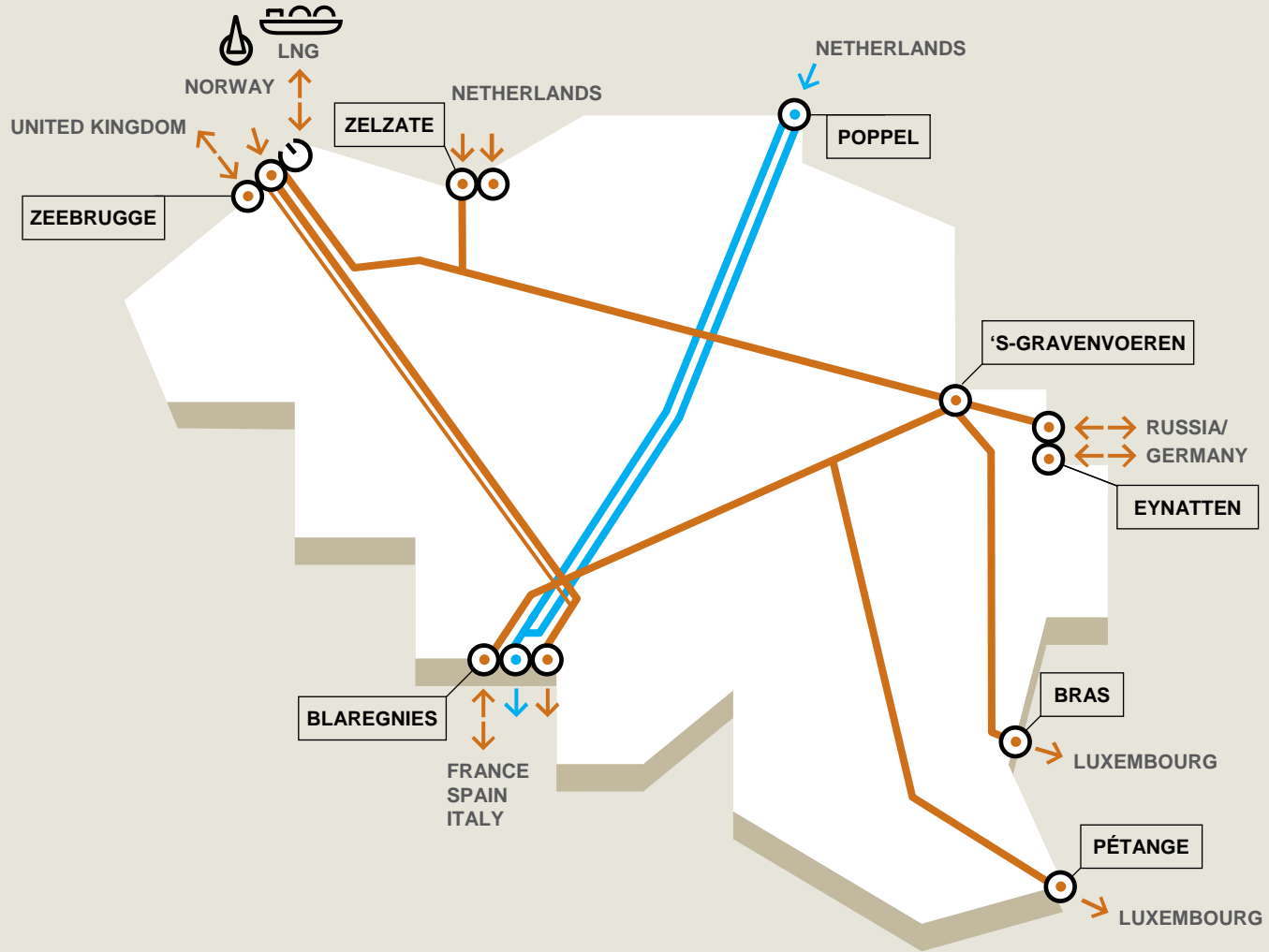
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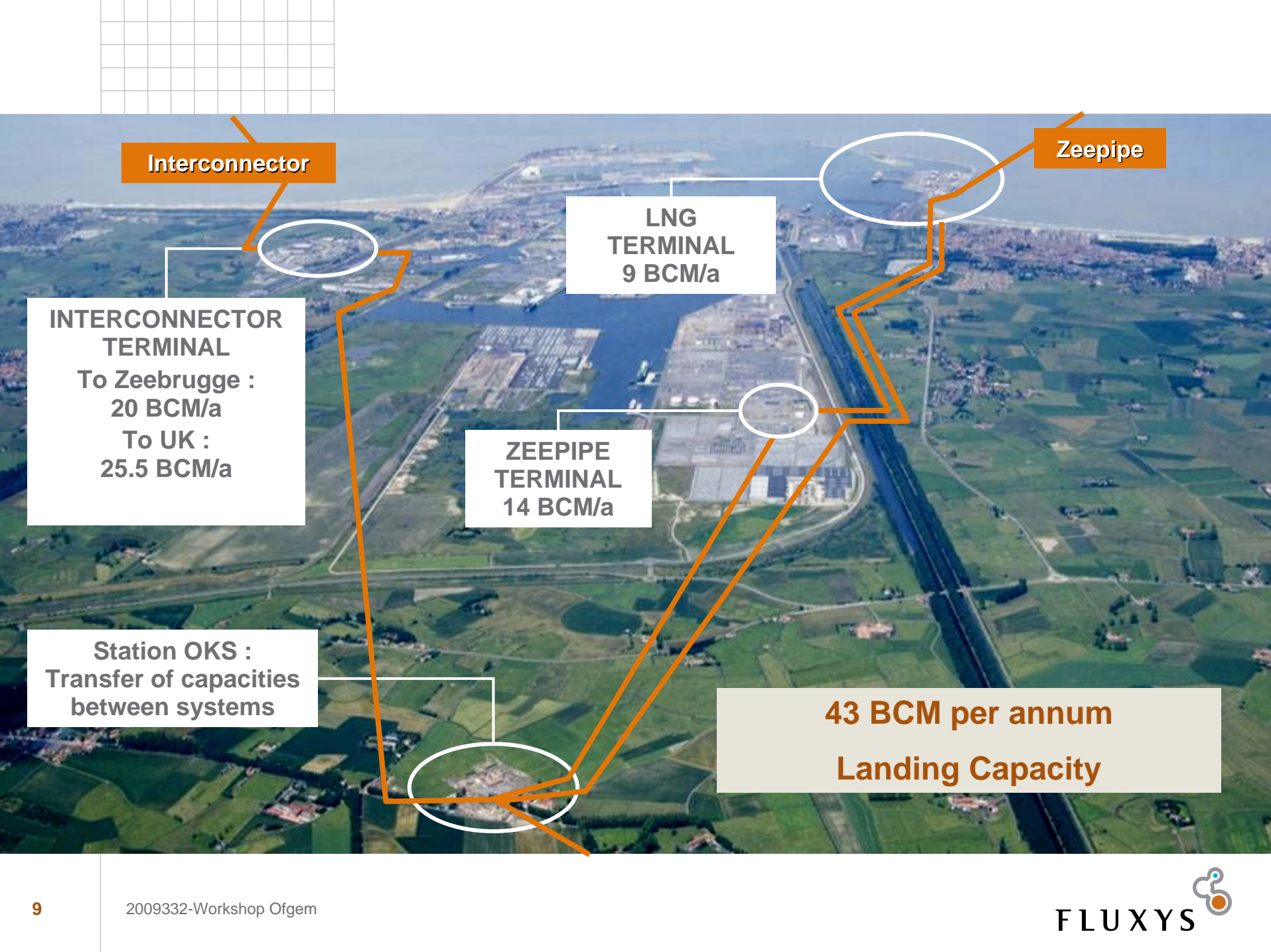
#03 **FLUXYS NETWORK ACHIEVEMENTS**

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FLUXYS NETWORK (TRANSIT)





Interconnector

Zeepipe

**LNG
TERMINAL
9 BCM/a**

**ZEEPIPE
TERMINAL
14 BCM/a**

**INTERCONNECTOR
TERMINAL
To Zeebrugge :
20 BCM/a
To UK :
25.5 BCM/a**

**Station OKS :
Transfer of capacities
between systems**

**43 BCM per annum
Landing Capacity**

WHAT HAS CHANGED SINCE 2006 (*)

- Grid reinforcement in Zeebrugge Area (Dudzele OKS)
- Commissioning extension LNG Terminal
- Zeeplatform: non-limited exchanges between IZT, ZPT, LNG and Hub
- Greater volatility of commercial flows (Eynatten)
- IZT gas composition for UK deliveries
- Norwegian gas quality at ZPT

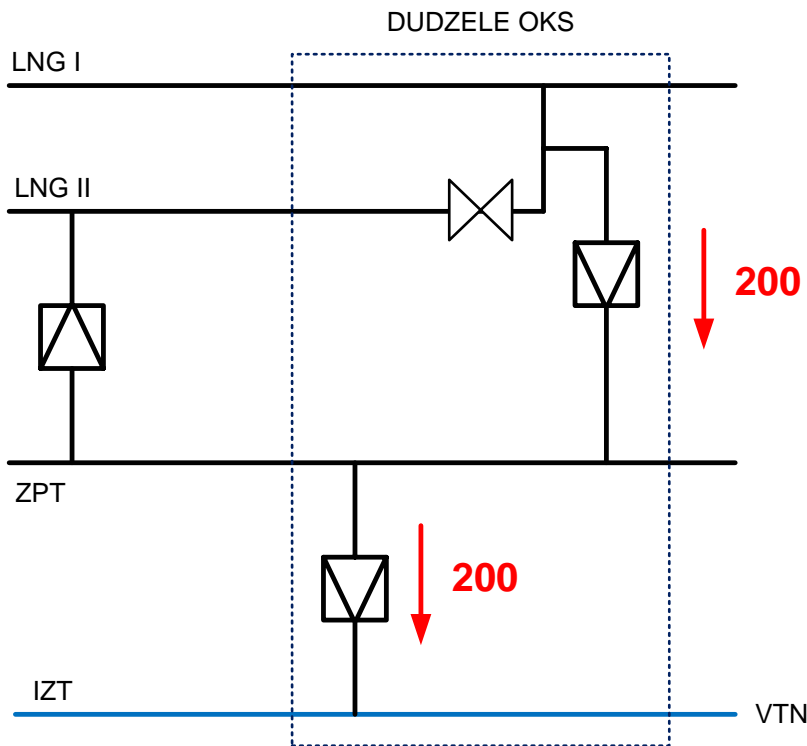
(*) Previous data sent by Fluxys in the framework of Three Phase Study Exercise

GAS QUALITY OPTIMIZATION (1)

- Nominations LNG to IZT/HUB and WI of LNG and ZPT are monitored continuously by the dispatching to prevent quality-based curtailments
- Quality monitoring is performed by Fluxys on a voluntary basis **in both forward and reverse direction** to prevent non UK compliant gas to enter VTN pipeline (connected to IZT)
- When LNG is not UK compliant, Fluxys makes use of swaps (and sometimes delivers gas from its line pack for short-lived gas quality excursions), i.e. substitutes Norwegian gas for LNG
- Eynatten gas is preferentially sent to the Zeebrugge region as it is (so far) always UK compliant

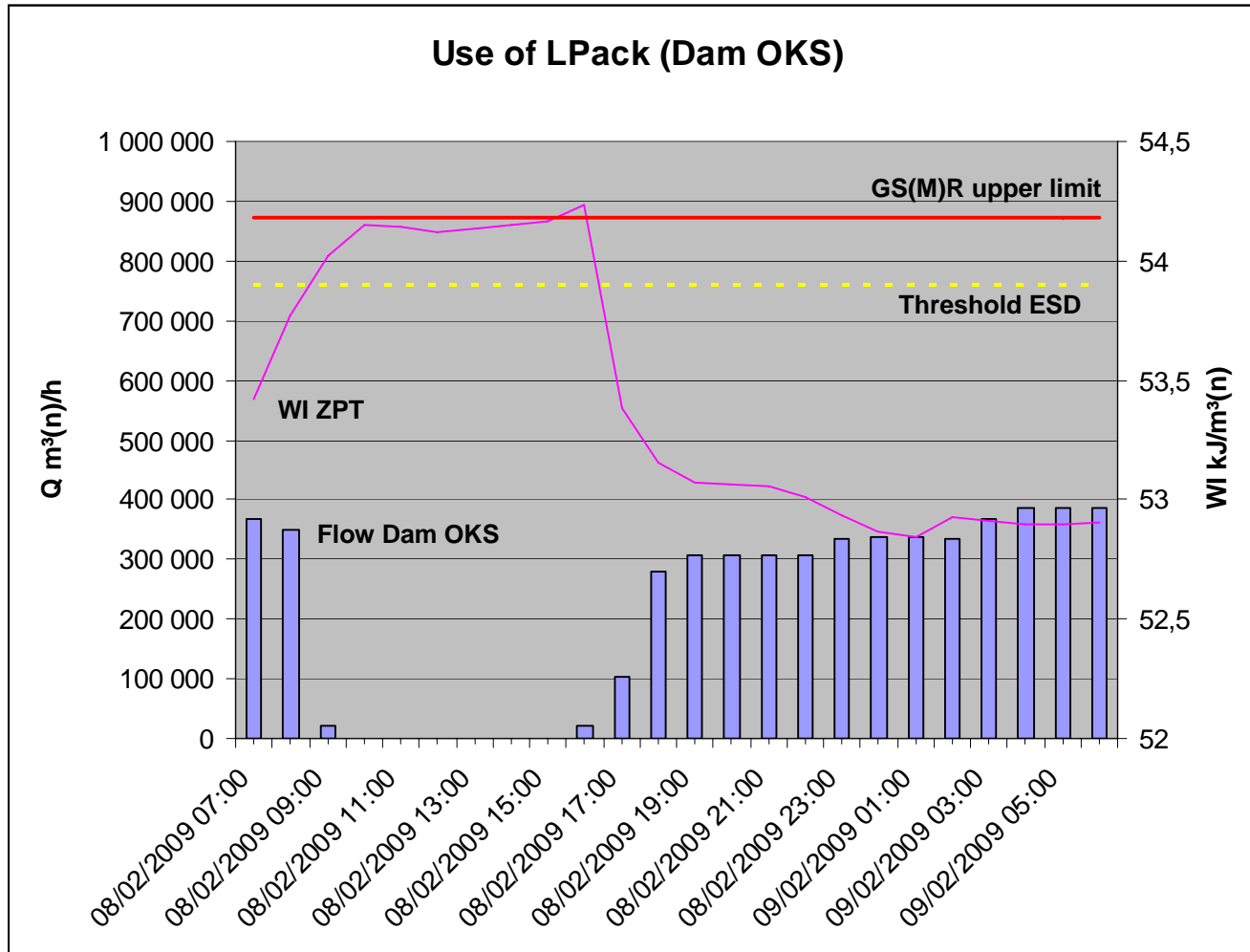
GAS QUALITY OPTIMIZATION (2)

NOMINATIONS LNG to IZT/ZEE HUB 200



- Conditional to ZPT WI being lower than GS(M)R upper limit (except when Lpack used)
- No secondary blending with Eynatten gas if ZPT WI > GS(M)R upper limit
 - uncontrolled flow from Eynatten
 - What if WI ZPT and/or flow OKS increase?

A "NEAR-MISS" ON 8 FEBRUARY 2009



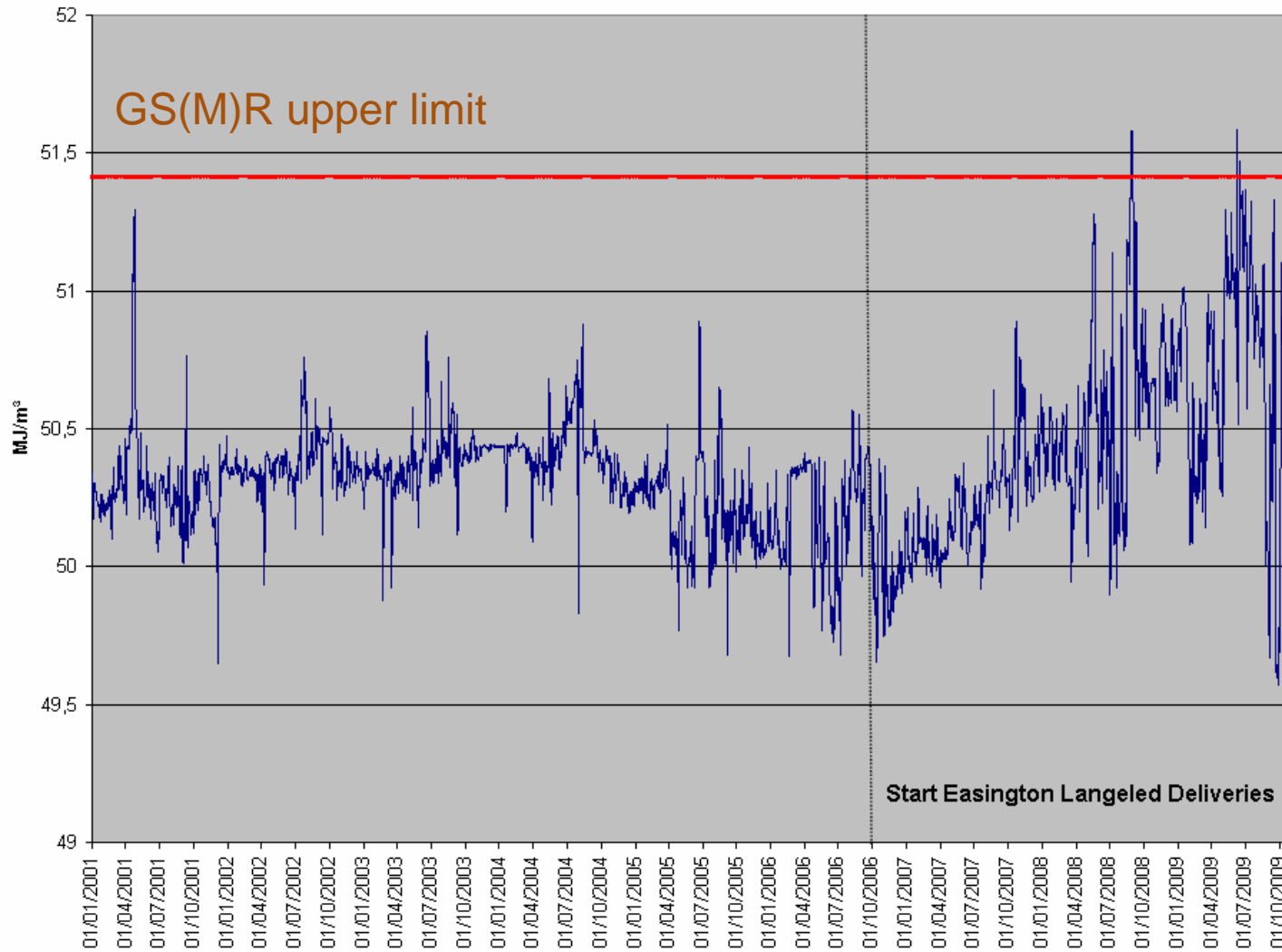
LNG WI 55,2 MJ/m³(n) >> GS(M)R If WI ZPT would have lasted all day, IZT flow reduction by 1/3

WHERE IS IZT GAS COMING FROM?

	Eynatten (%)	Norway (%)	LNG (%)
2005-2006	51,4	47,7	0,8
2007-2008	70,4	21,6	8,0
2008-2009	28,7	71,3	0,0

- Eynatten gas unpredictability significantly reduces the gas availability towards UK (depends increasingly on basis Zeebrugge Hub – NCG)
- LNG is in more than 90% of the cases not UK compliant, which renders injection into VTN impossible
- ZPT WI is higher than in the past and for longer periods of time (but still in line with existing contractual obligations)

WOBBE INDEX ZPT



HAS FLUXYS REACHED THE LIMITS?

- Fluxys has until now maximized the use of its installations on a voluntary basis to prevent quality-based curtailments
- Conditions making swaps possible are less and less favourable (richer gas, flows volatility)
- Gas deliveries to UK (commercial and physical) are at risk now, and curtailments are likely to take place soon

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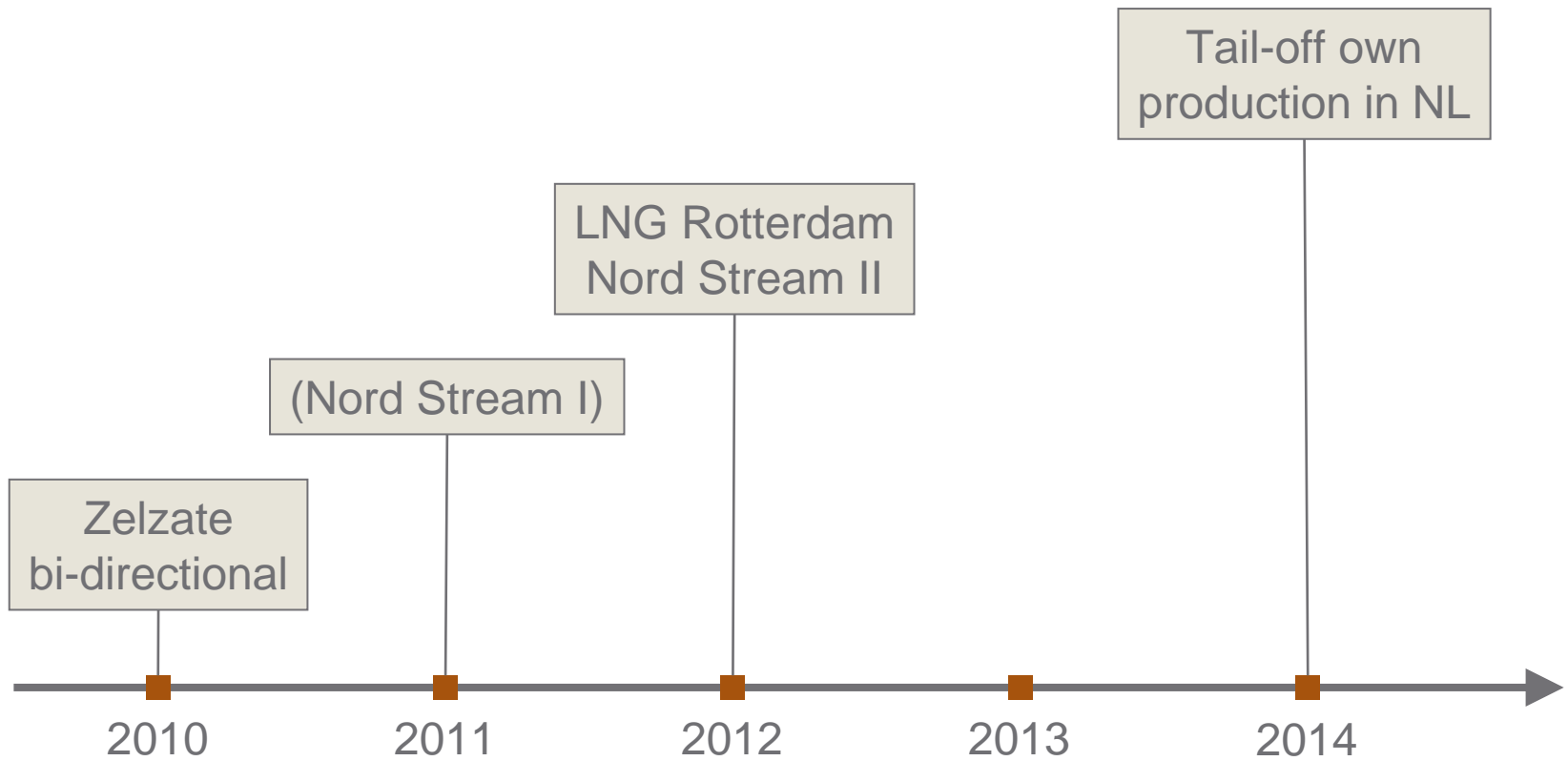
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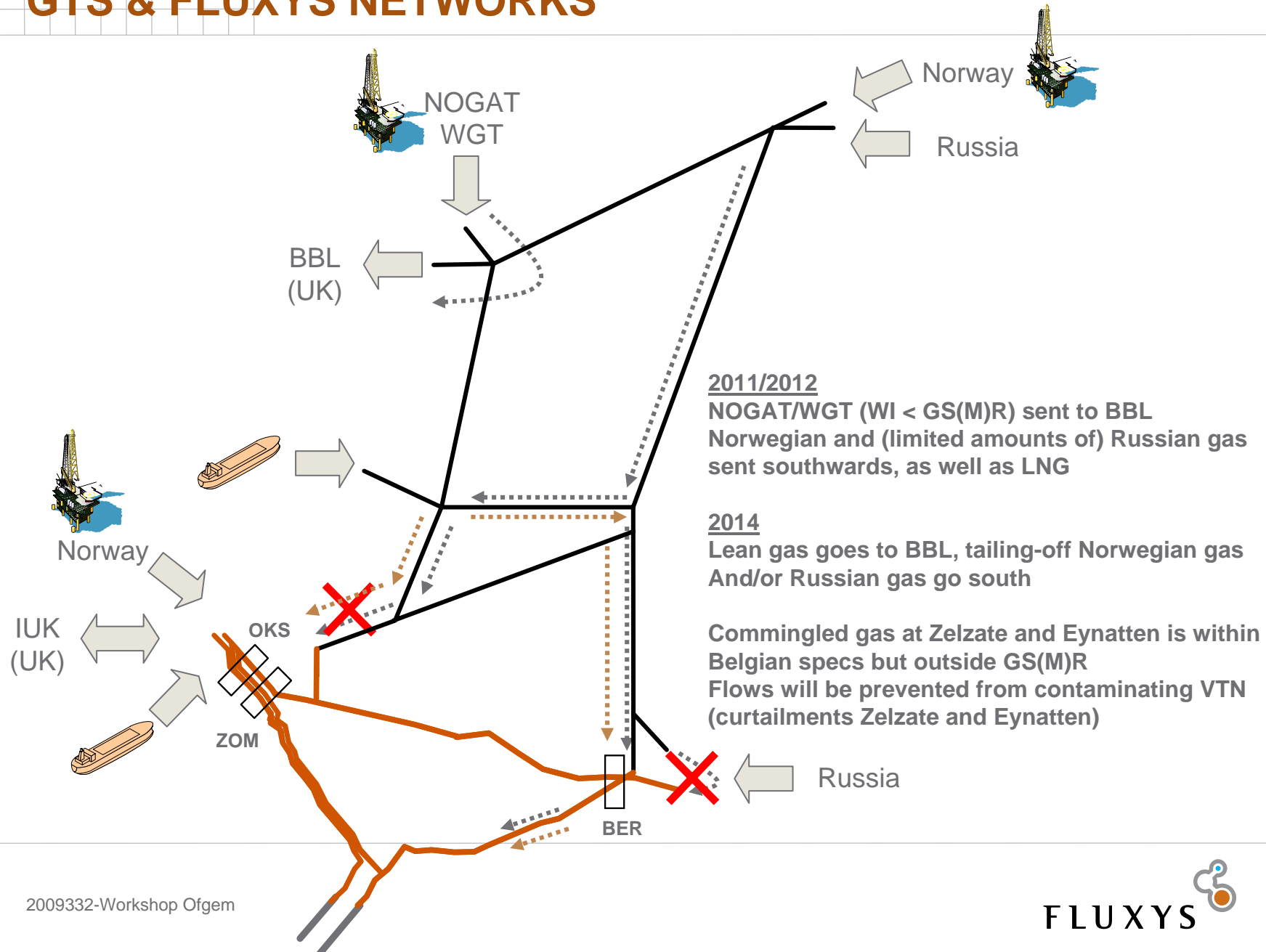
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WHAT IS ON THE CARDS?



GTS & FLUXYS NETWORKS



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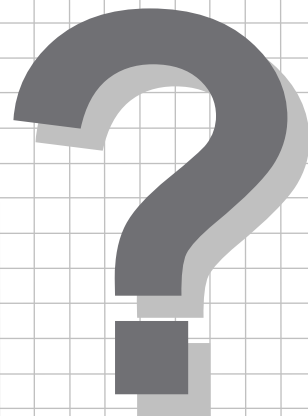
CONCLUSION

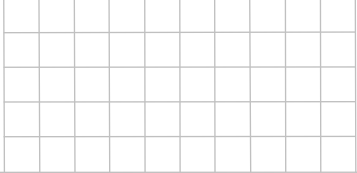
- NW Europe will be supplied with gasses presenting higher WI values
- Continental countries, contrary to UK, can accommodate such higher values which lie within the limits of their respective national legislations
- Europe will be flooded with gas and UK will face supply restrictions, most likely at a time when LNG carriers go to more attractive markets and pipeline gas is needed
- We hope all UK stakeholders will prevent this situation from happening...

THANK YOU FOR YOUR ATTENTION

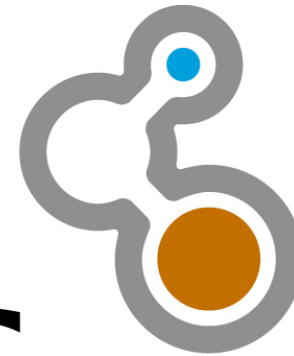


QUESTIONS ?



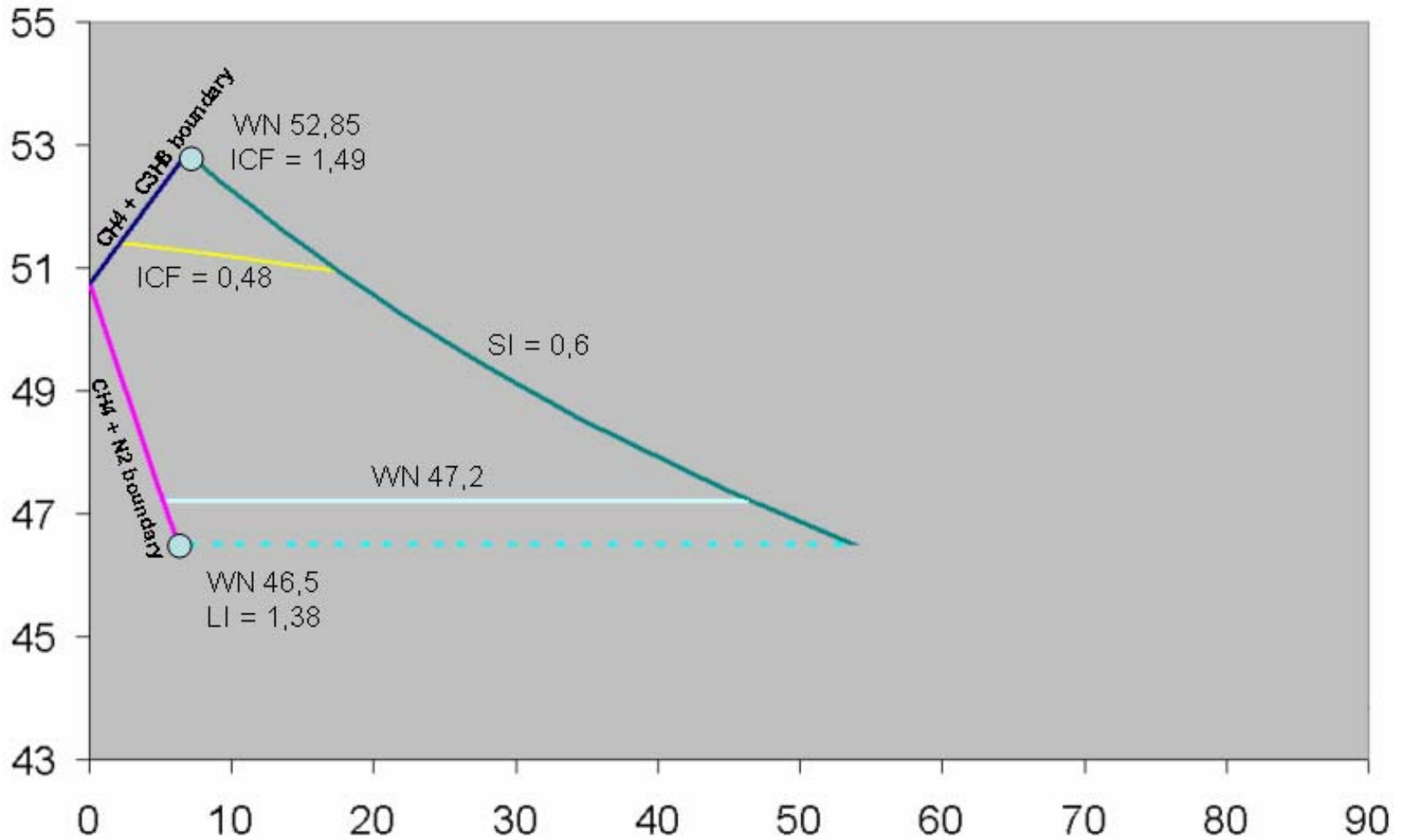


FLUXYS

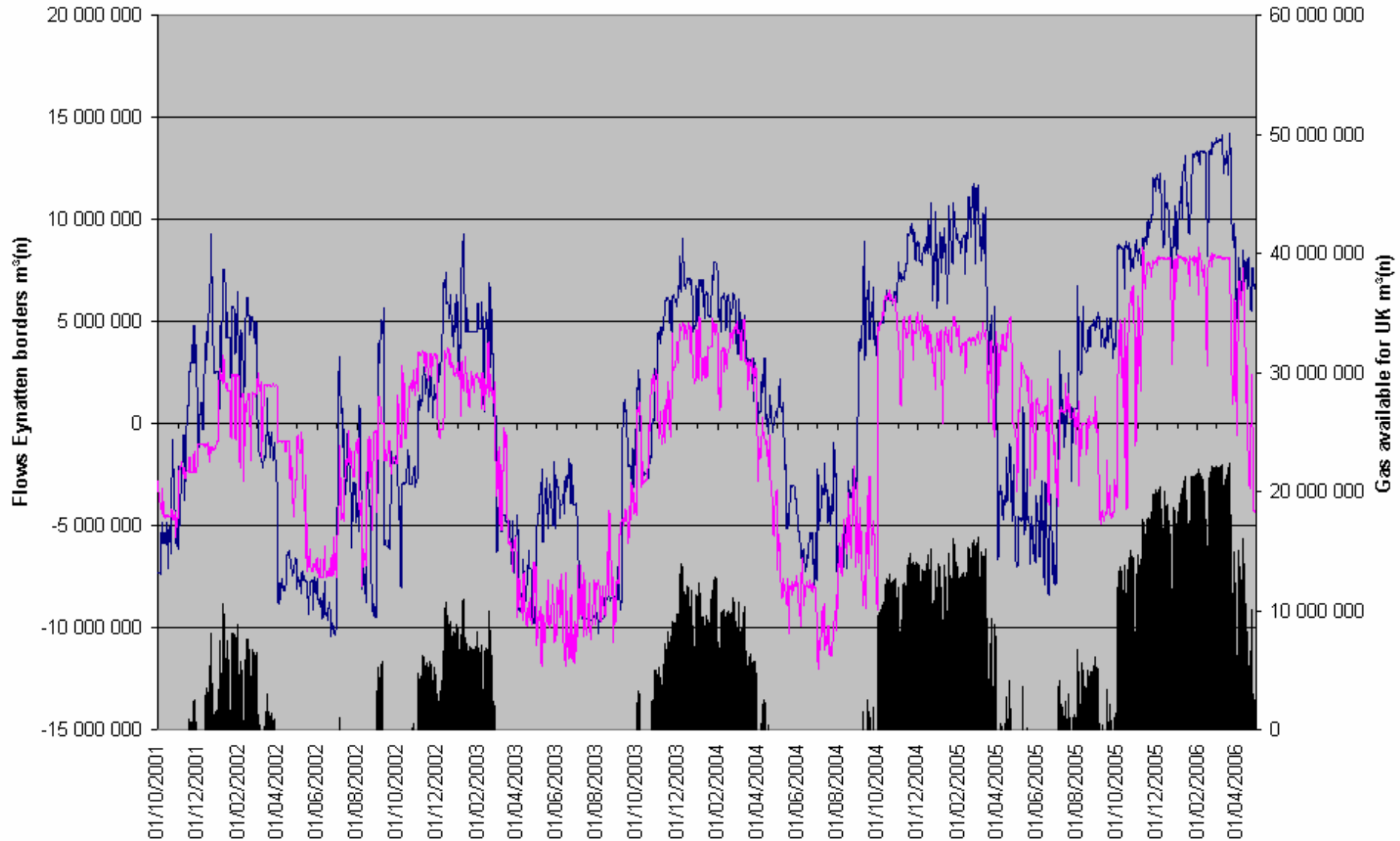


EXCELLENCE IN GAS TRANSPORT

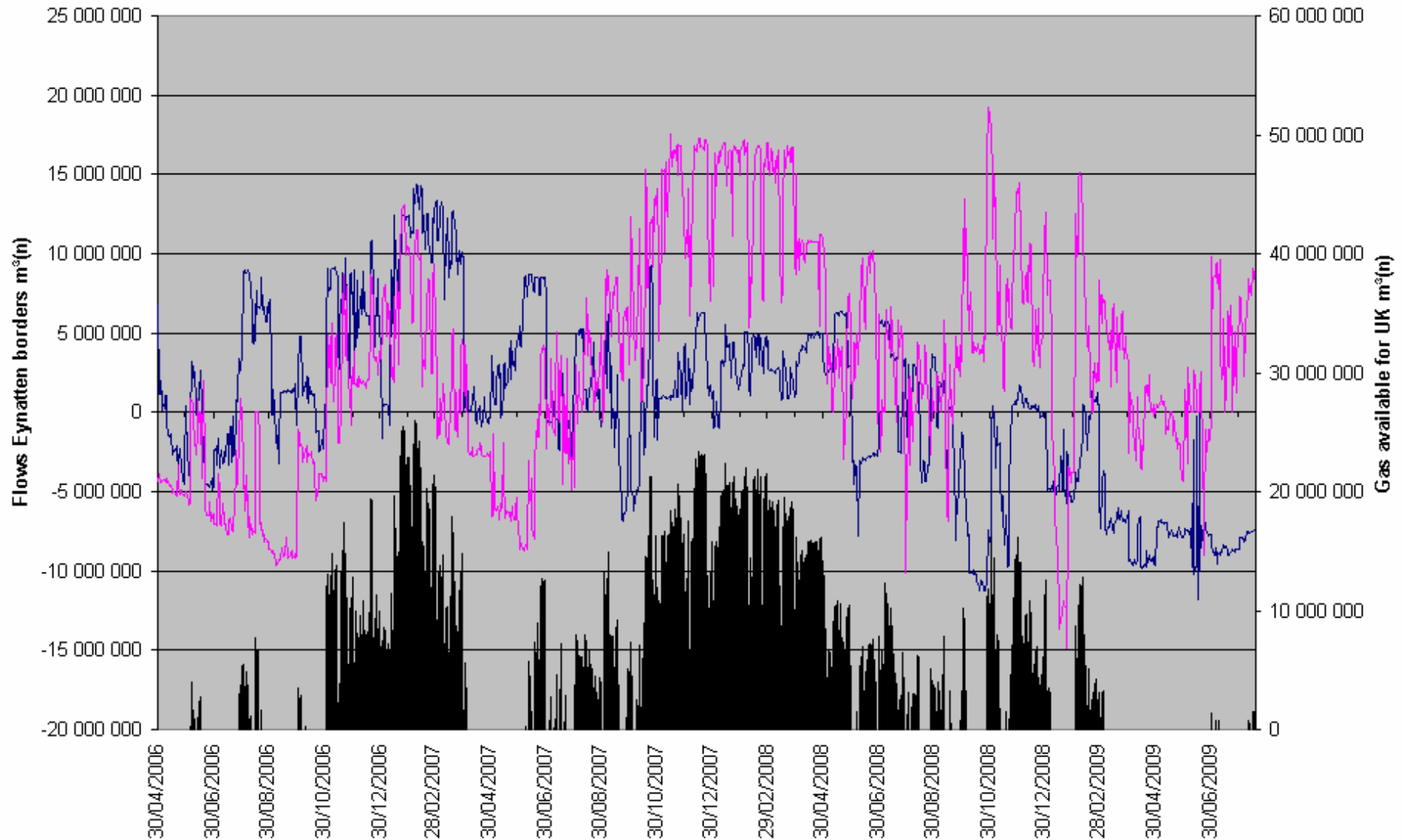
INTRODUCTION (2)



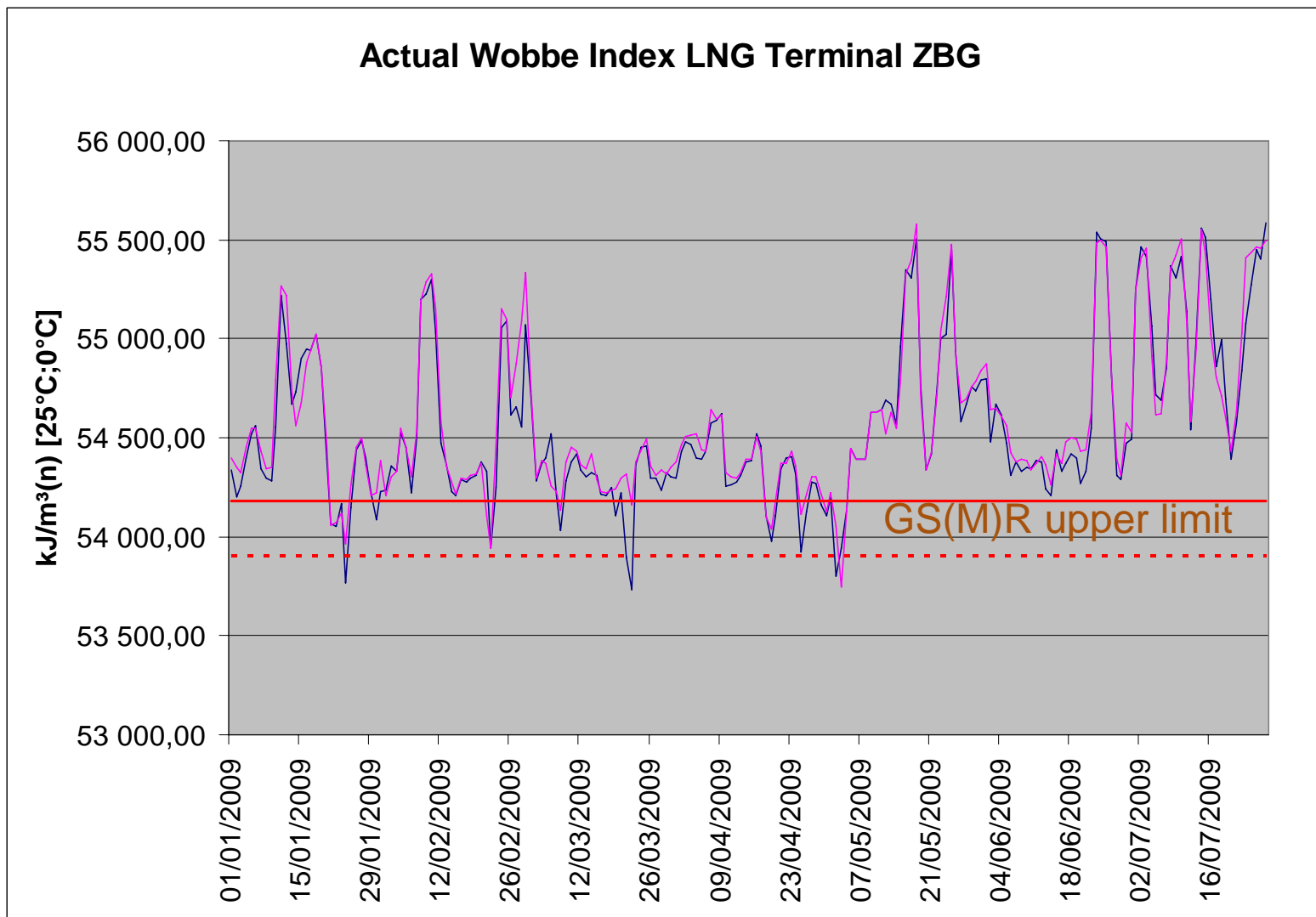
Eynatten flows (1)



Eynatten flows (2)



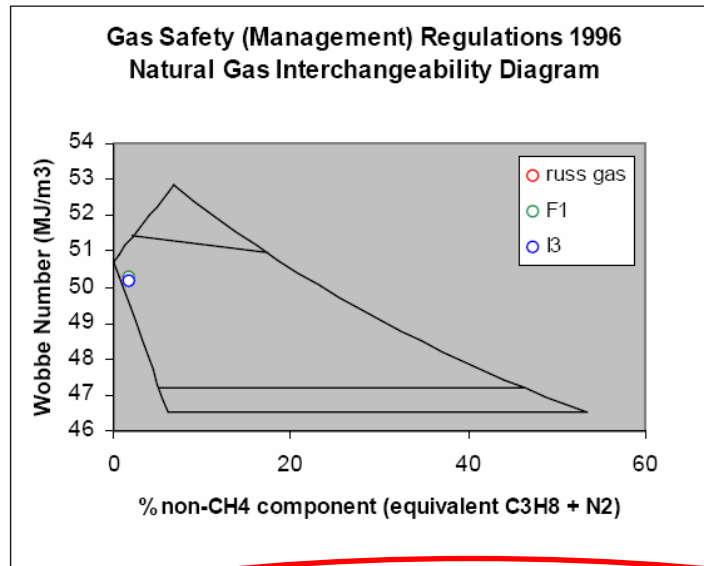
LNG Gas Quality - Wobbe



Ilex Report 2003 – p52

8.14 Despite being sourced from a huge area, Russian gas imported into Germany is generally a consistent quality of about 50.2 MJ/m^3 and over 98% methane. This high methane content and its consistency and large volumes make it an excellent source of blending gas. This composition meets all the GS(M)R limits. The consistent quality arises because of the fact most of the gas comes from relatively few gas fields. Figure 25 below shows three gas compositions plotted on the Dutton diagram. The plots all overlap each other on the left side of the chart.

Figure 25 – Three Russian gas compositions plotted on the Dutton Diagram



8.15 There is a high possibility that gas quality will change in the future with the development of new regions. In addition this could increase the variability of gas quality. No data was available on the likely gas quality of the new gas regions.