Levels of Carbon Dioxide (CO_2) and Nitrogen (N_2) in the NTS

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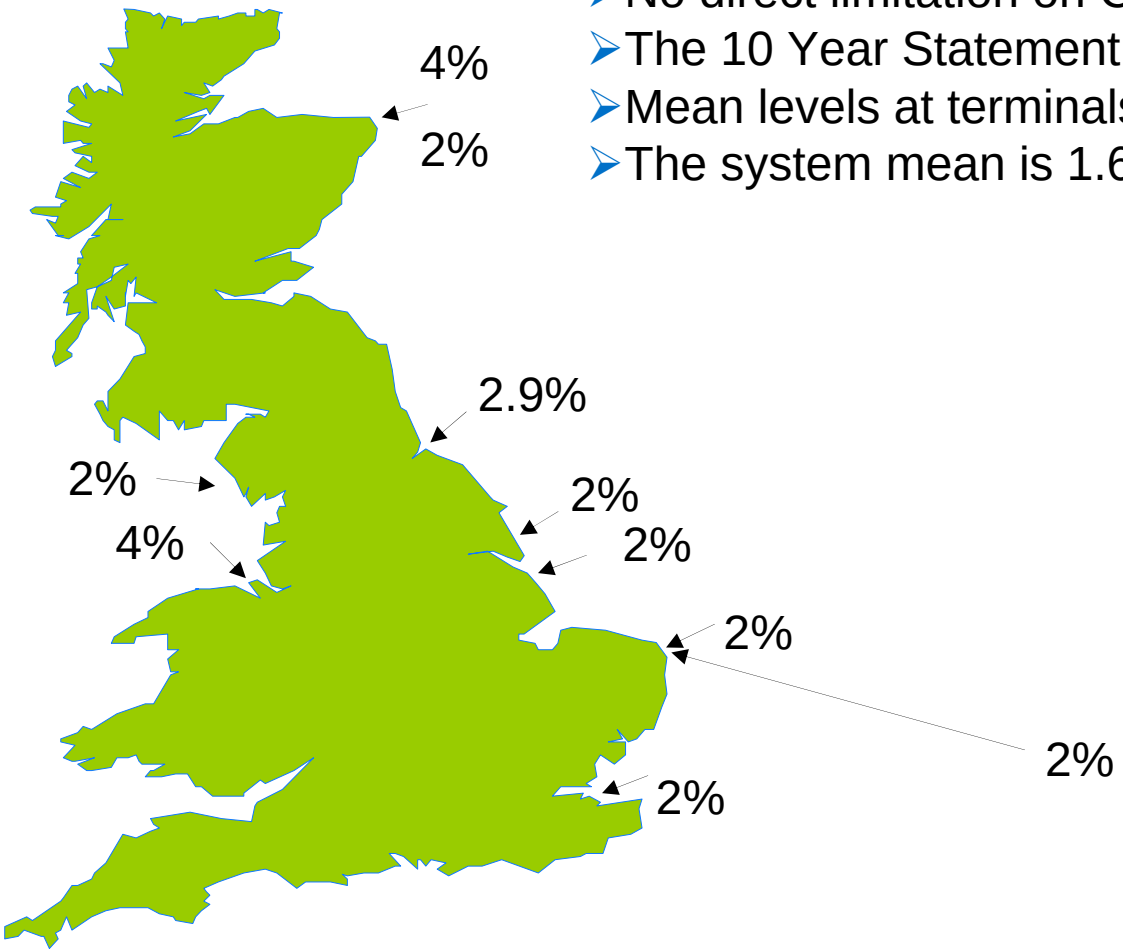
Contractual maximum CO_2 levels today

- No direct limitation on CO_2 through legislation
- The 10 Year Statement indicative value is 2%
- Mean levels at terminals range from 1.0% to 2.2%
- The system mean is 1.6%



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Carbon dioxide emission factors (1)

Carbon dioxide emission factors for UK natural gas 2004			
Charging	**CO_2 EF(net)**	**NCV**	**CO_2 EF(quantity)[1]**
Zone	tCO_2/TJ	MJ/m^3	gCO_2/m^3
Eastern	56.54	35.58	2011.63
East Midlands	56.85	35.43	2014.56
Northern	57.49	36.38	2091.61
North East	57.48	36.50	2097.73
North Thames	56.60	35.56	2012.52
North West	57.01	35.30	2012.46
Scotland	57.46	36.14	2076.51
South East	56.51	35.45	2003.24
Southern	56.76	35.47	2013.20
South West	56.83	35.41	2012.44
West Midlands	56.96	35.31	2011.21
Wales North	57.00	35.30	2012.39
Wales South	56.90	35.39	2013.75
2004 UK Average	56.98	35.65	2031.15

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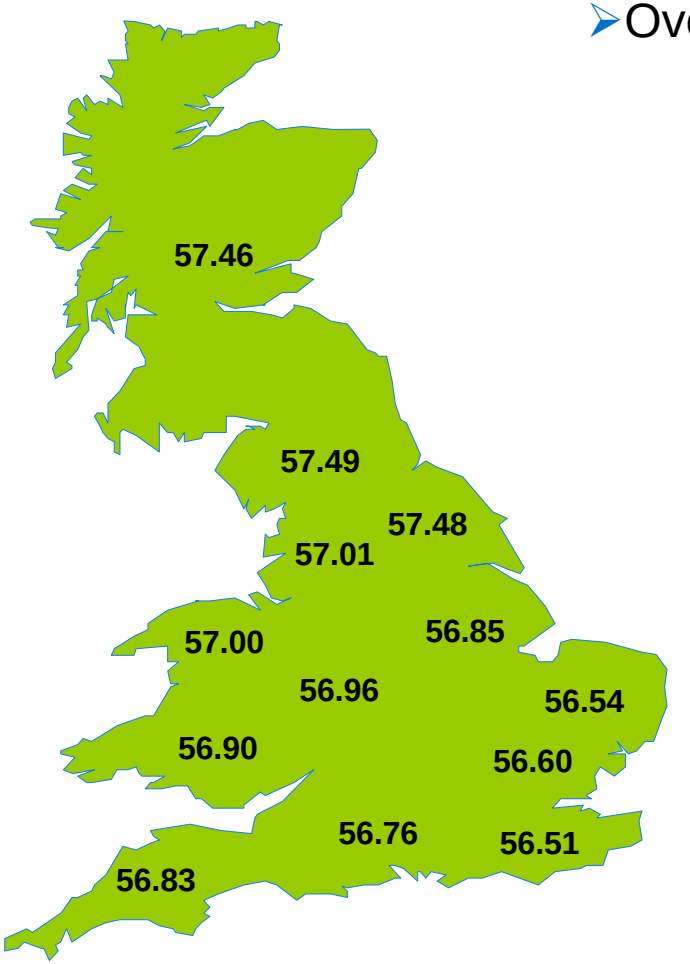
Regional Carbon Emission Factors 2004



- Overall system mean CEF is 56.98

CEFs published on DEFRA website:
”Carbon Emission Factors and Calorific Values from the UK Greenhouse Gas Inventory for use in 2005 EU ETS reporting year”

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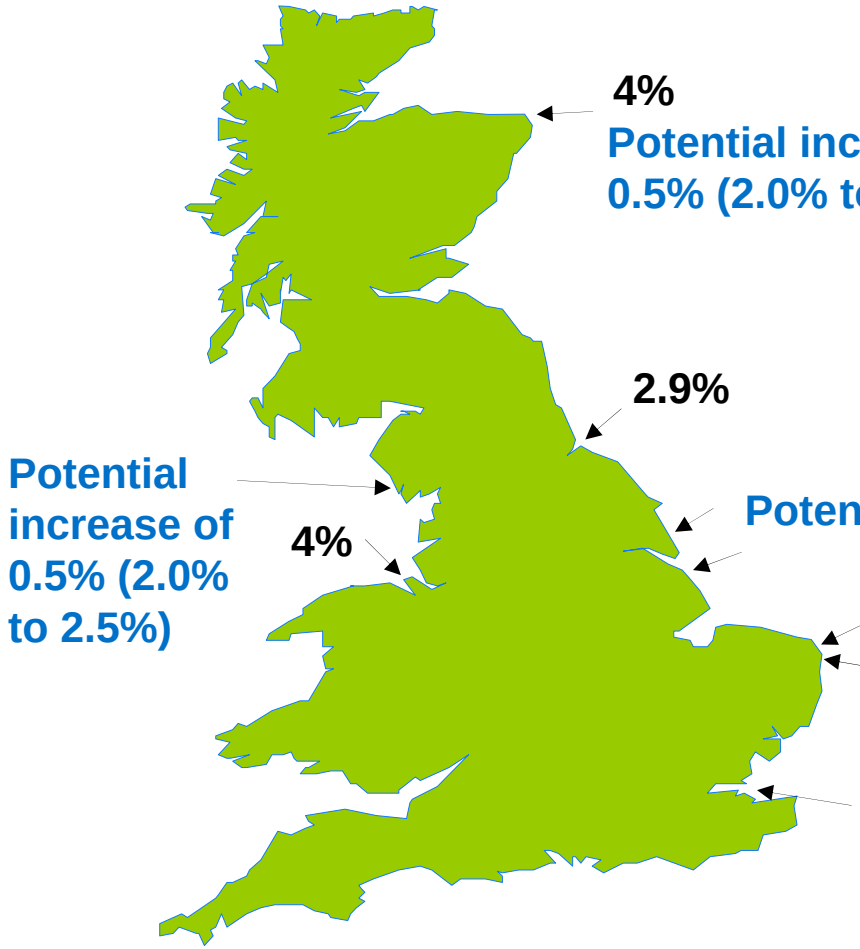
Contractual maximum CO_2 post implementation of modification 0049

- The 10 Year Statement indicative value would become 2.5%



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Forecast future mean system CO_2 level (1)

- We forecast that mean system CO_2 will decline from approximately 1.6% to between 0.7 and 1.0%, due to a combination of UKCS field decline of reservoirs containing relatively high CO_2 and increased LNG imports that contain no CO_2. It is the latter that primarily determines the range shown in the scenario.

- An additional line is also shown on the chart; this line represents the forecast level of CO_2 should specific upstream supplies take advantage of a higher 2.5% CO_2 entry specification.

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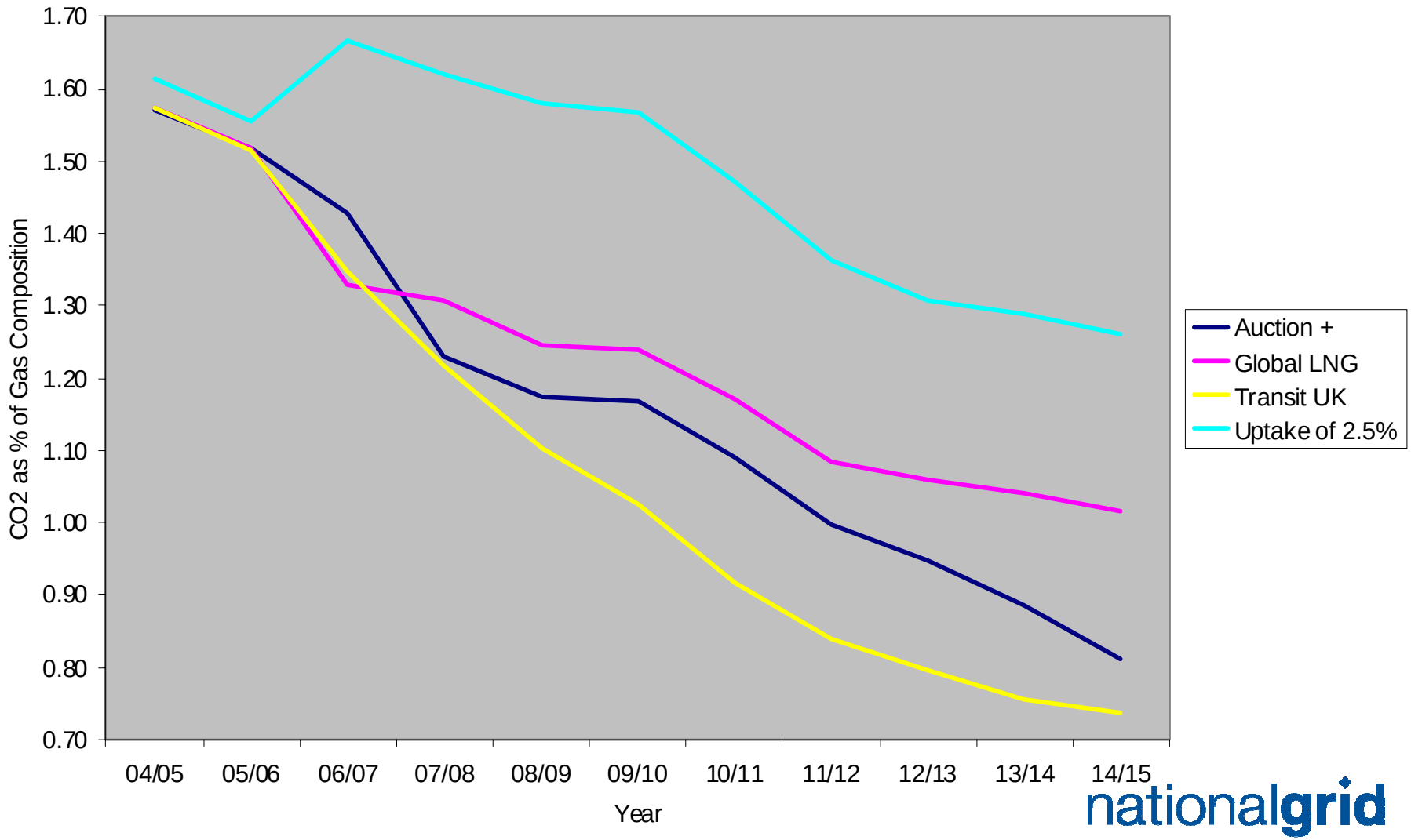
Forecast future mean system CO_2 level (2)



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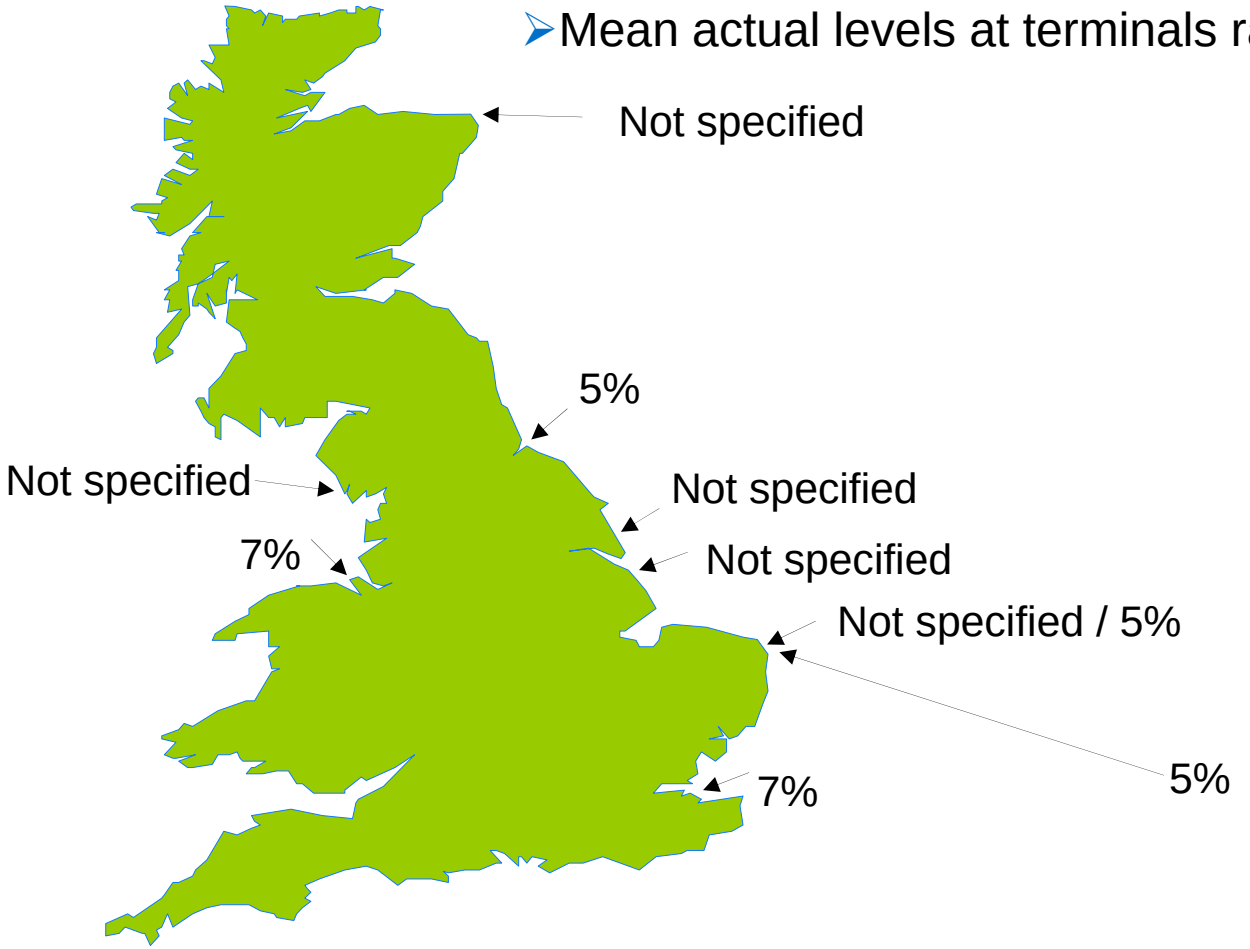
Contractual maximum N_2 levels today

- No direct limitation on N_2 through legislation
- The 10 Year Statement indicative value is 5%
- Mean actual levels at terminals range from 1.0% to 3.7%



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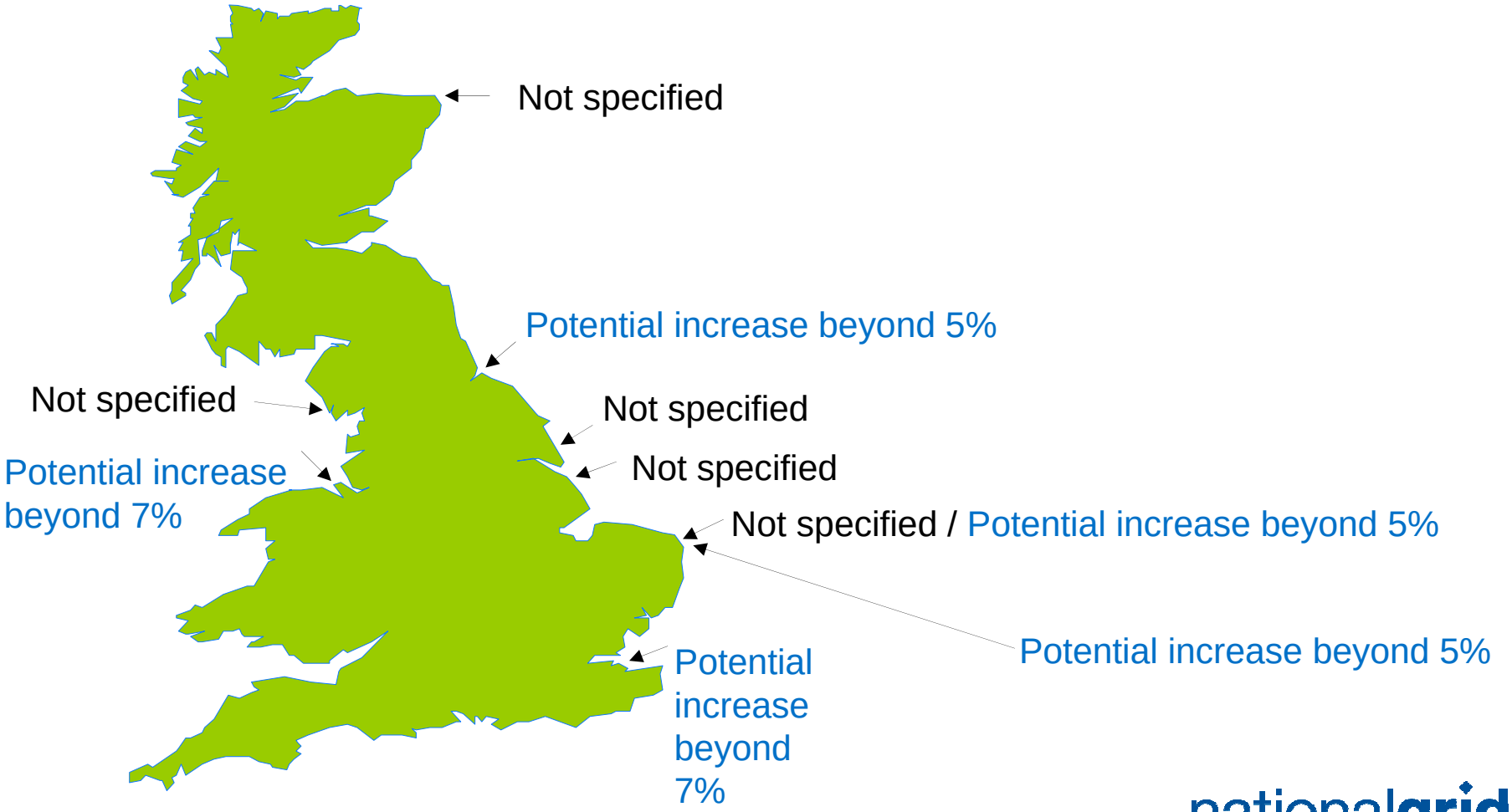
Contractual maximum N_2 post implementation of modification 0049

- The 10 Year Statement indicative maximum value would be removed



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Forecast future mean system N_2 level (1)

- The following chart shows our forecast of future NTS average N2 concentrations from our three supply scenarios. The general trend is for lower levels of N_2 as some of the new imported supplies are assumed to have lower levels of N_2 than the UKCS supplies they displace. This is notably the case for new Norwegian imports and LNG.

- The chart also shows two step out cases showing the resultant levels of N_2 in new imports are experienced. Whilst Case 1 is considered a real possibility, resulting in near uniform N_2 levels; Case 2 is considered exceptionally remote.

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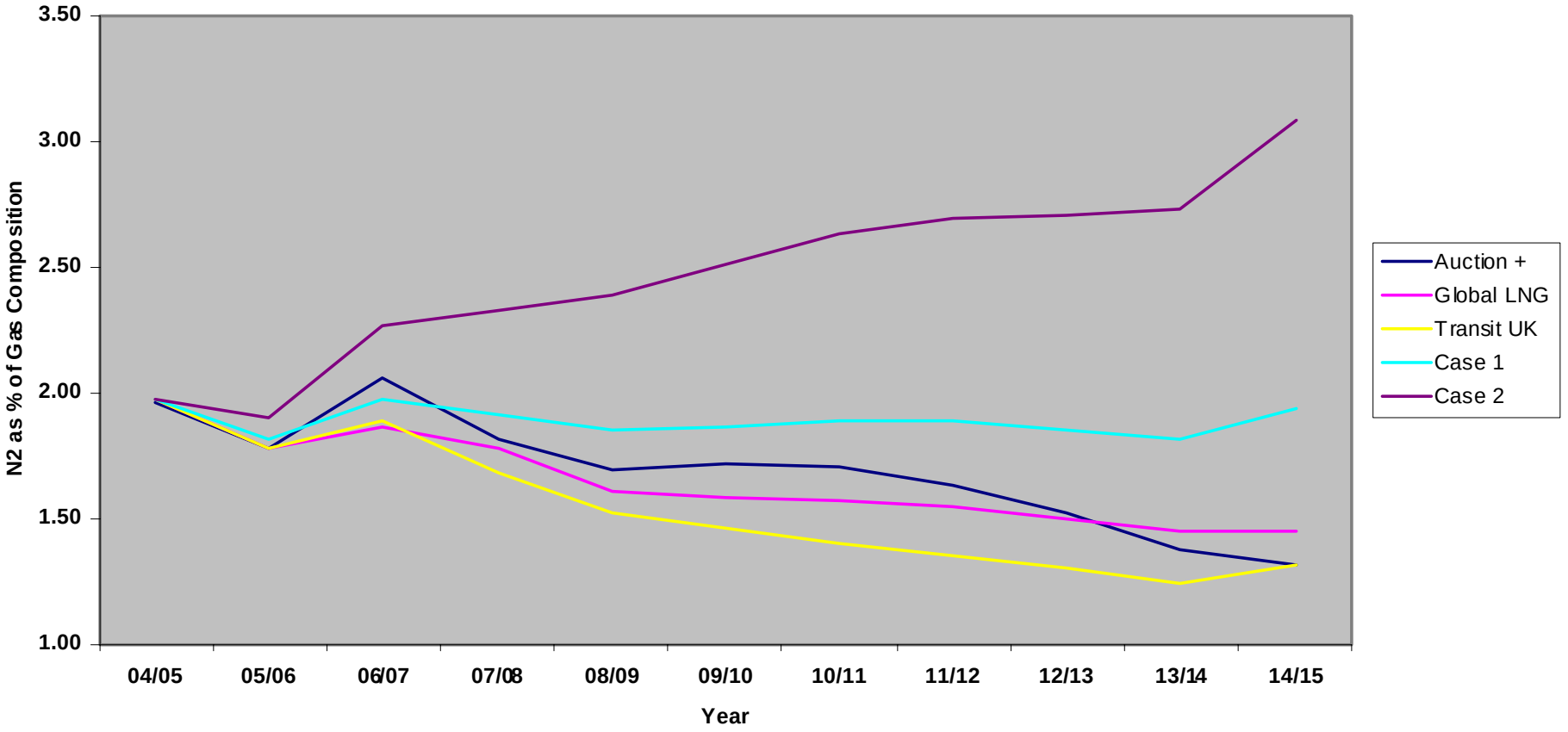
Forecast future mean system N_2 level (2)



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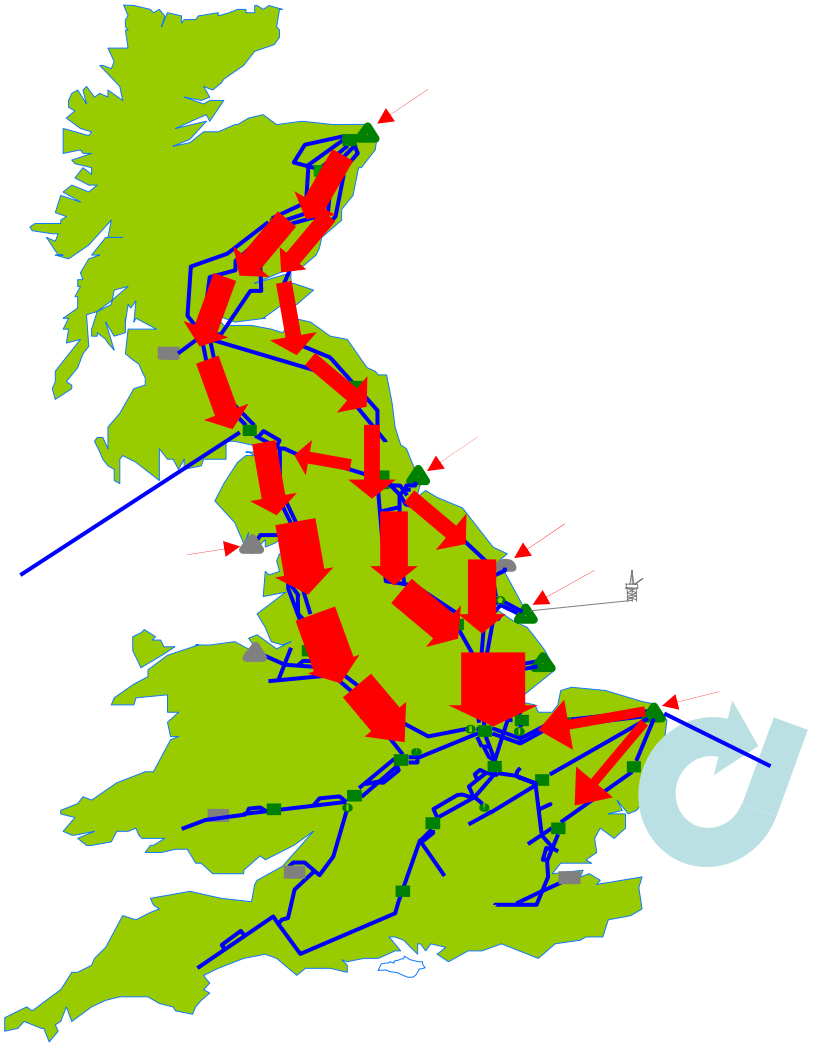
Flow pattern - today

- Currently, the NTS moves gas primarily from North to South, reflecting:
  - Associated gas from oil production
  - Centres of demand
  - Interconnection to Europe



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Flow patterns in the NTS

- However, new imports of gas are imminent
- New gas specifications will vary
- Supply = Demand
  - If you want to get more in at A...
  - ...you have to put less in at B

- Flow patterns will change
  - Shippers will have more flexibility with flows
    - Patterns will change on day-by-day basis
  - Future compositions are uncertain
  - Future flow patterns are uncertain

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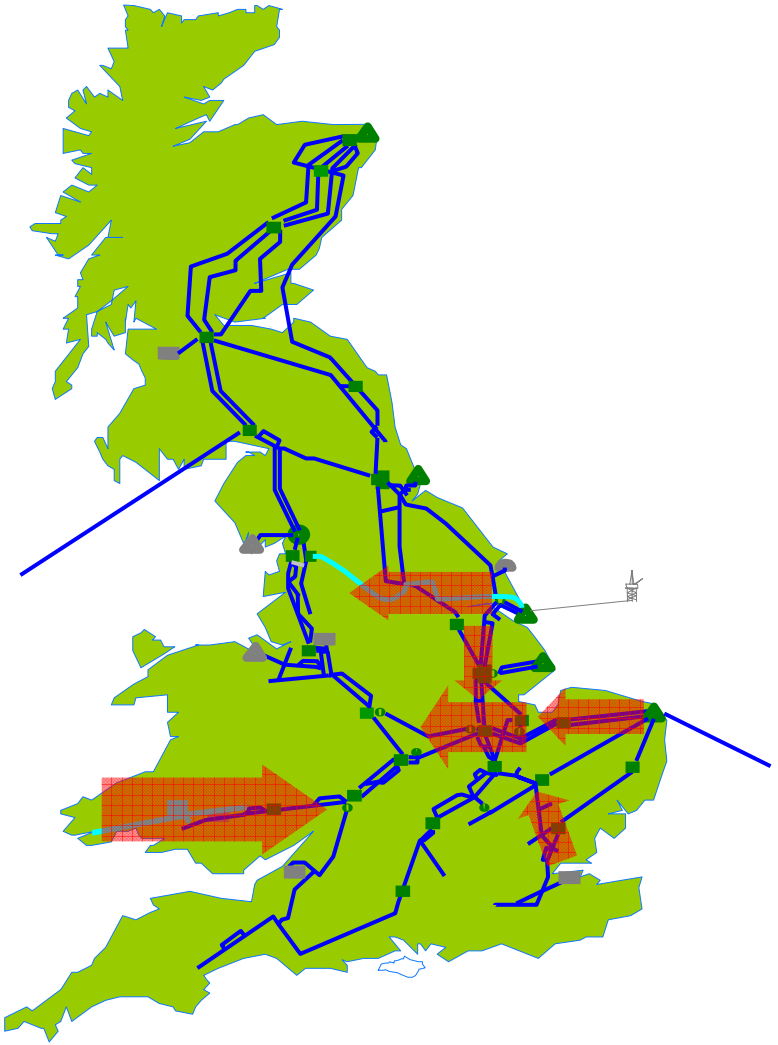
Flow patterns beyond 2005

- Significant growth in supply capacity from imports:
  - Milford Haven LNG
  - Norwegian gas at Easington
  - “European” gas at Bacton
  - Grain LNG
- ...with corresponding lower flows at existing ASEPs mean flows in the NTS could be
  - East and South East to West

  or
  - West to East
- ...as well as continuing to potentially be North to South



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Back up slides – NTS development

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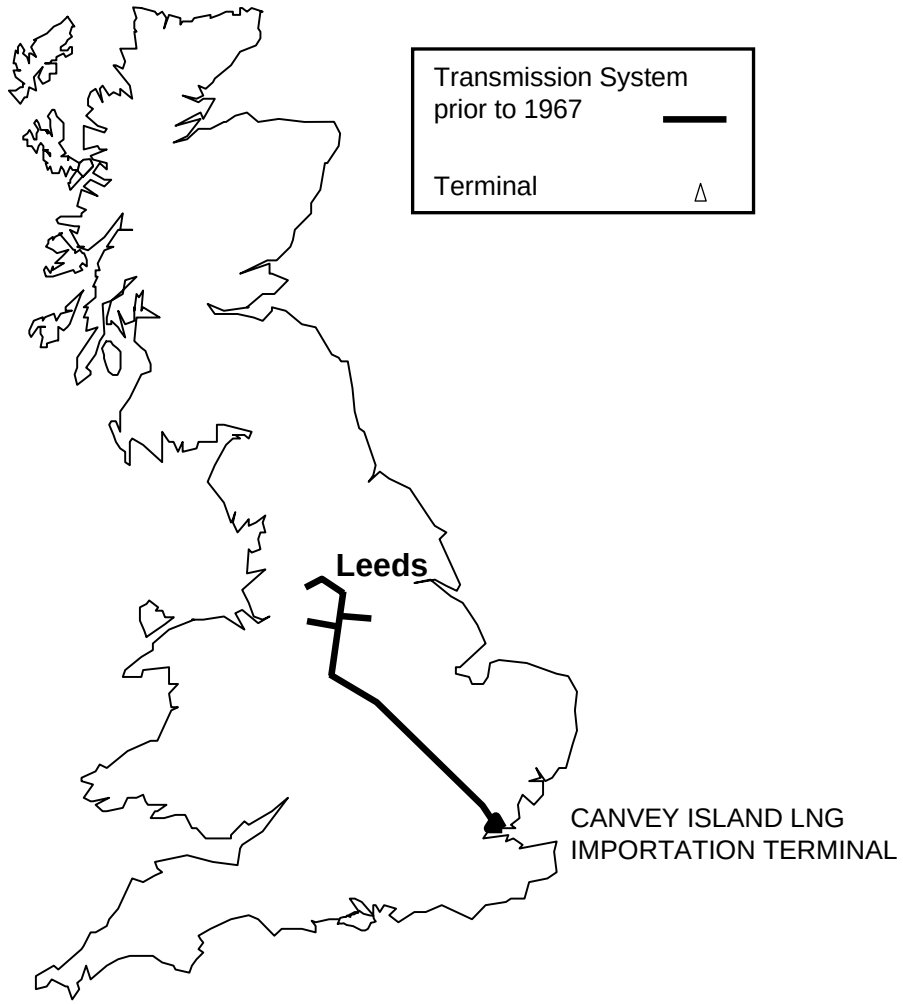
The development of the NTS

The Algerian methane grid - 1965



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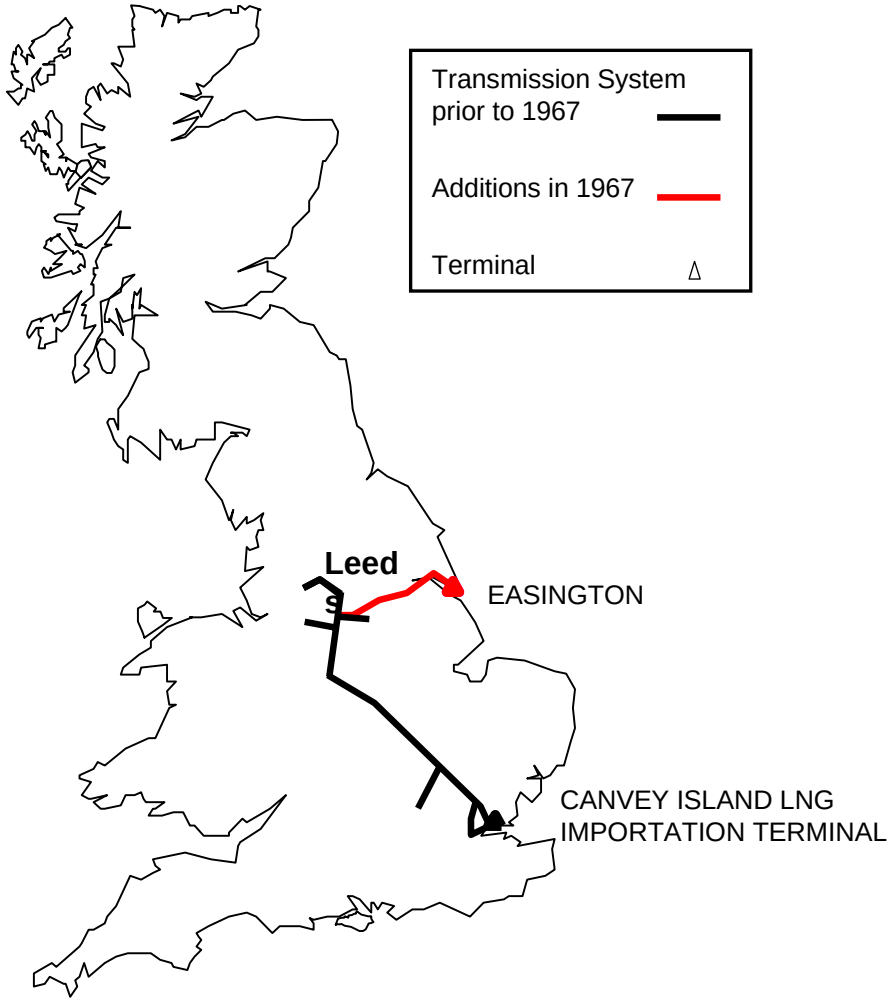
The development of the NTS

The start of North sea supplies - 1966



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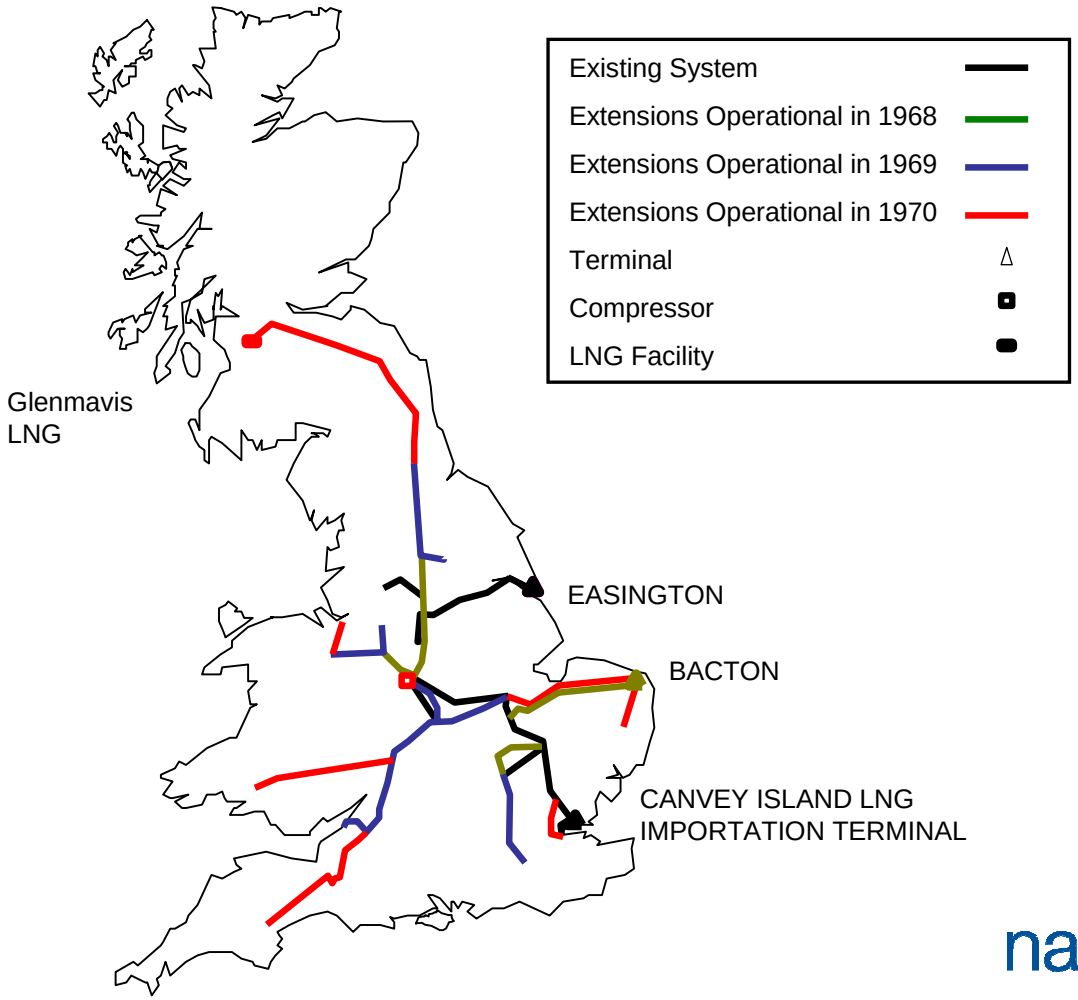
The development of the NTS

Major system expansion 1968 - 1970



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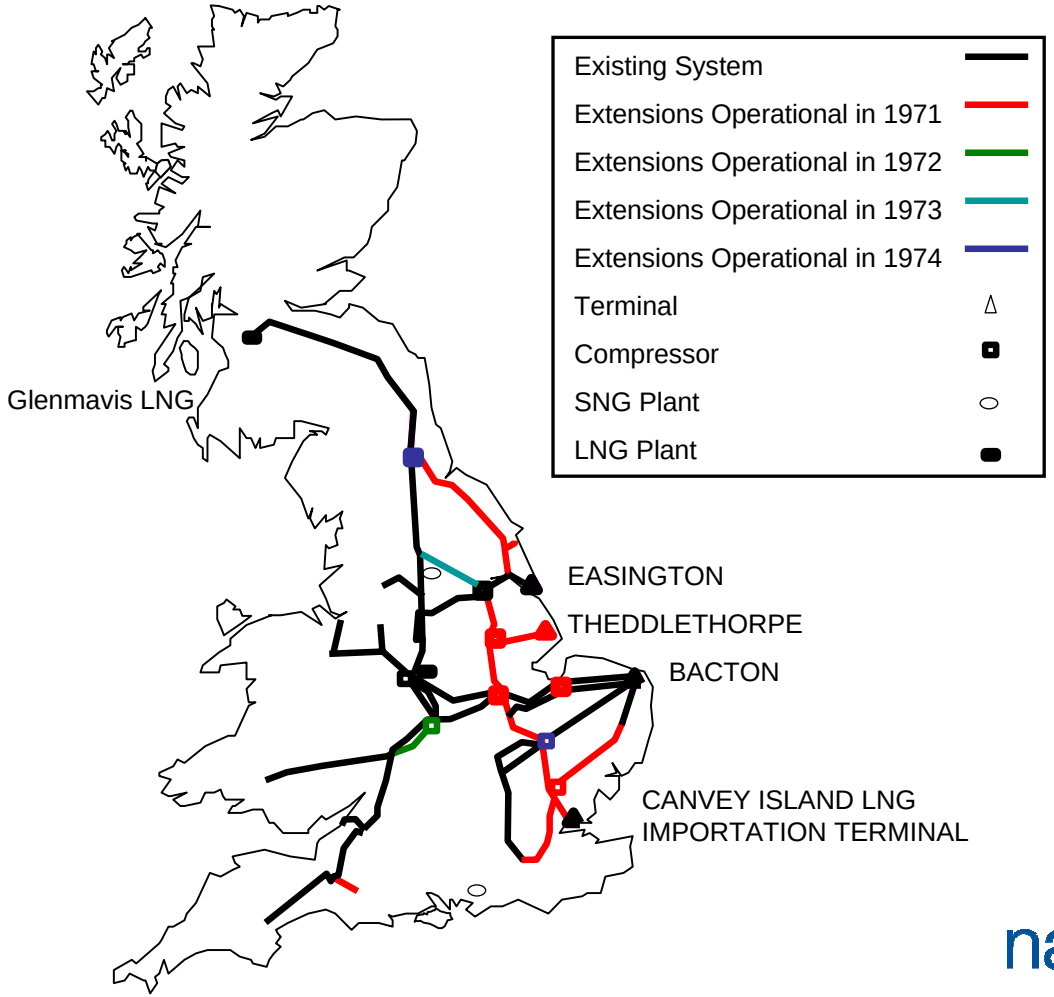
The development of the NTS

System expansion 1971 - 1974



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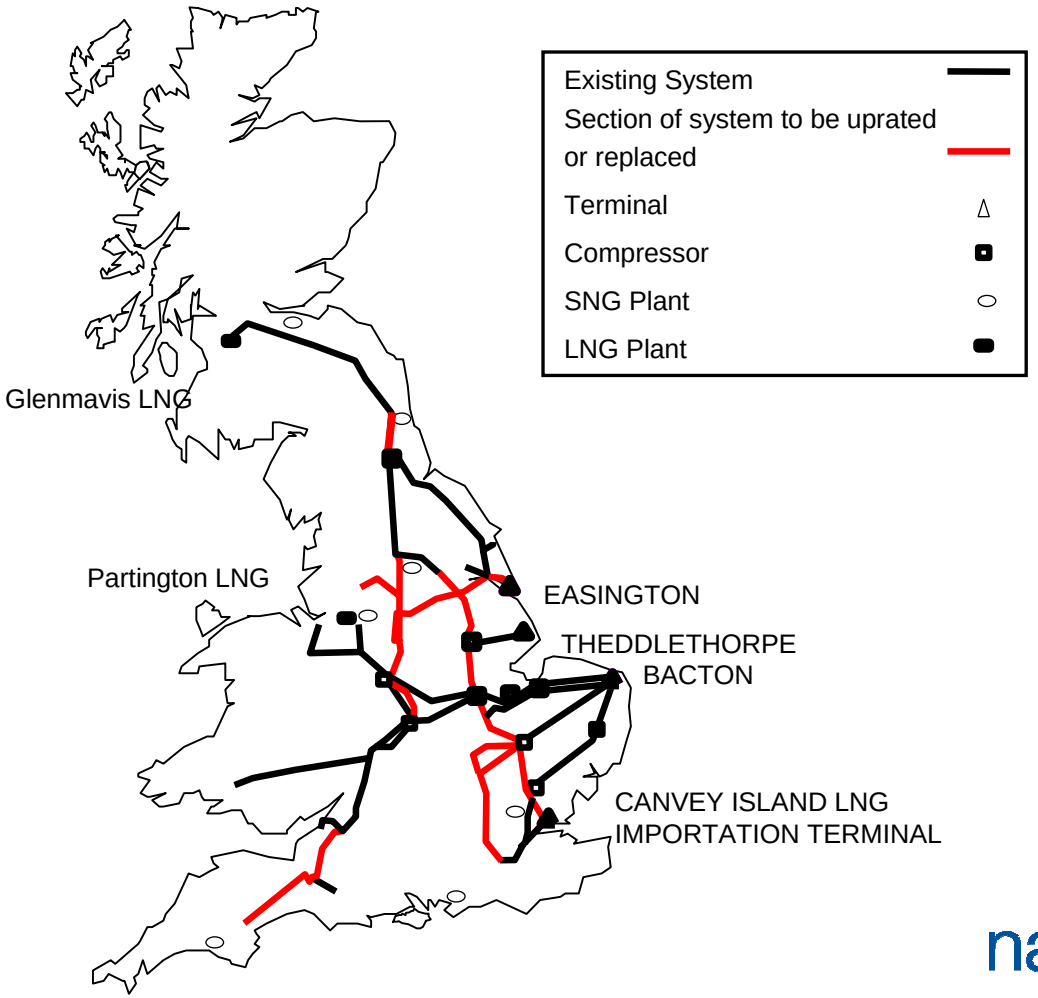
The development of the NTS

1976 – Prior to St. Fergus coming on-line



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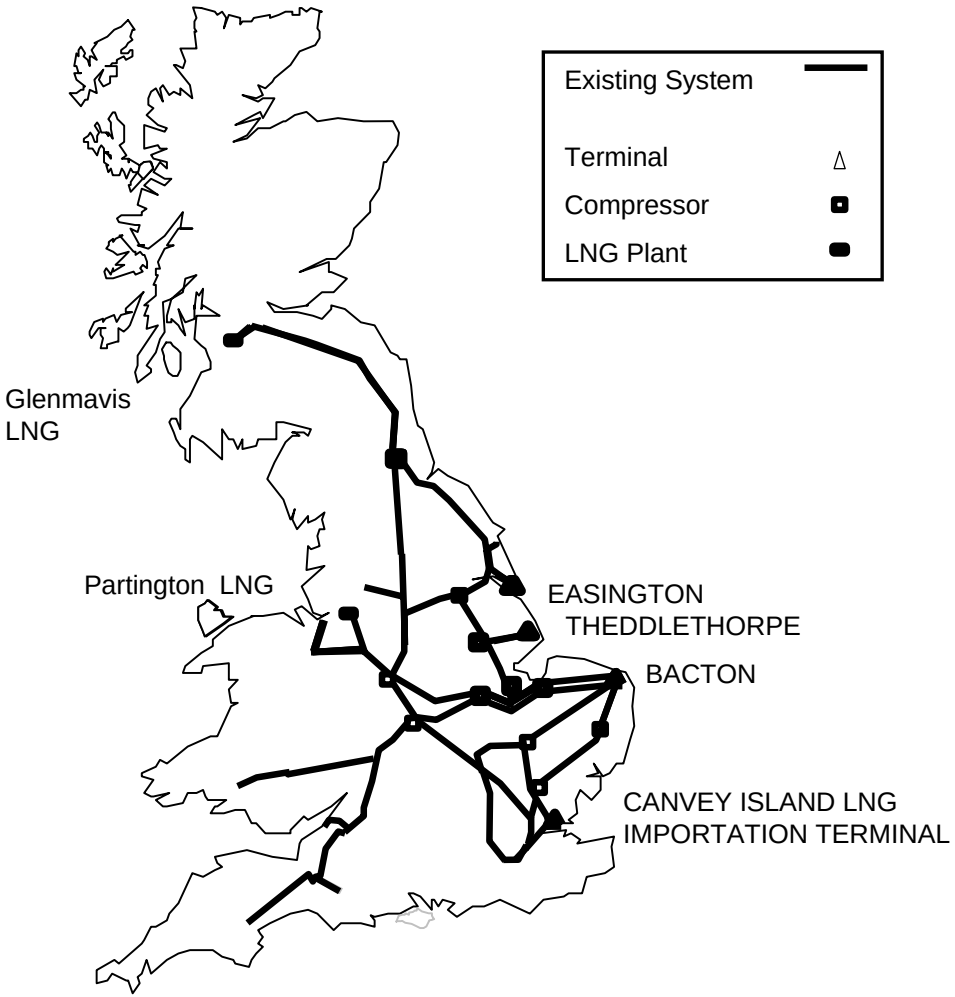
The development of the NTS

1976 – Uprated system ready for St. Fergus supplies



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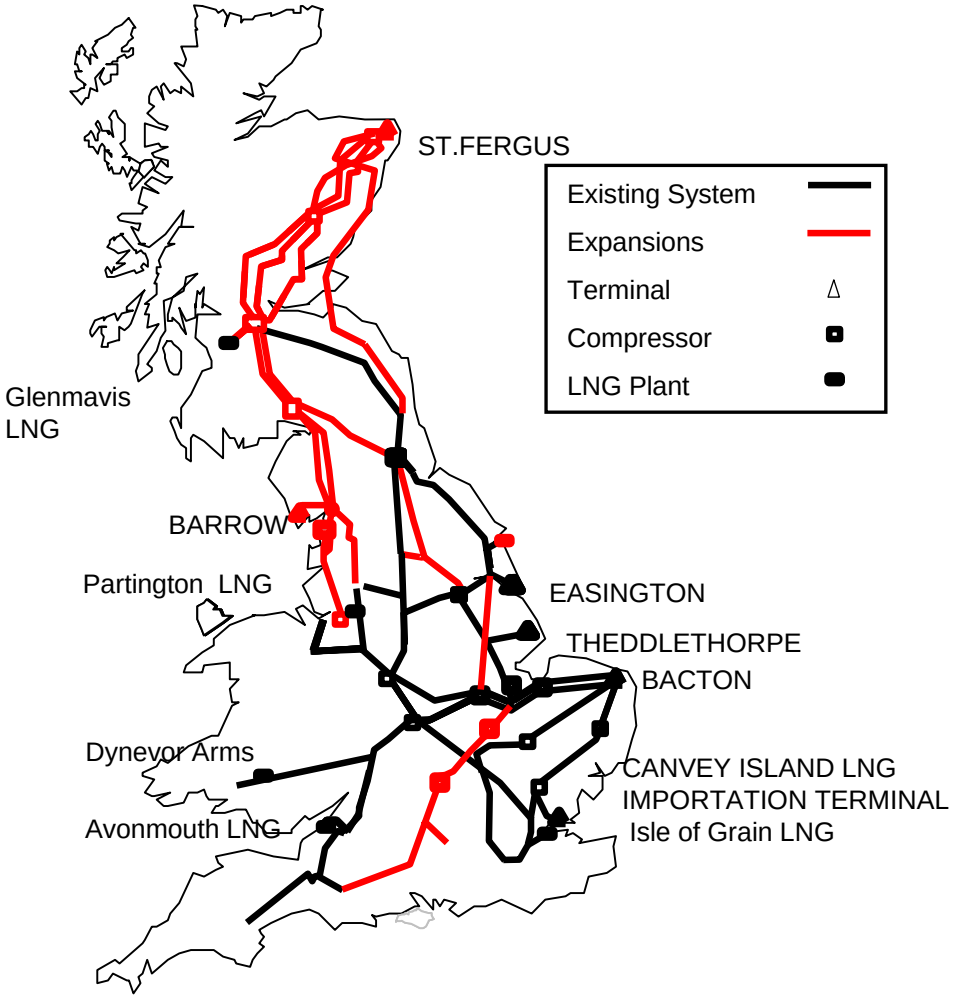
The development of the NTS

St. Fergus expansion 1977 - 1990



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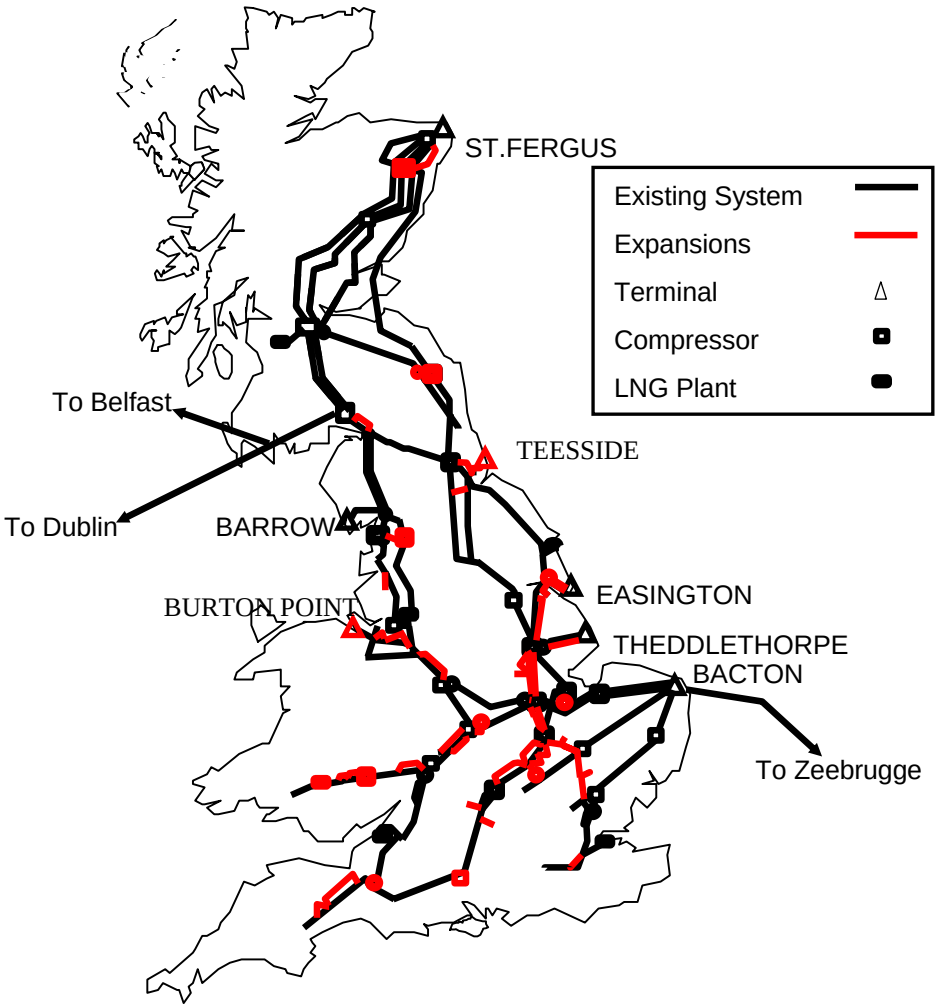
The development of the NTS

System expansion 1990 - 2002



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