



# **kellas**

## **MIDSTREAM**

**Energy Transition & Emissions Reduction**

OEUK Decarbonisation Conference

12th October 2023



Kellas: Who We Are

Kellas: Energy in Transition

H2NorthEast

Green Horizon H2

CATS Terminal: Emissions Reduction Projects

Summary & Growth



# Who We Are

An independent energy infrastructure company that owns and operates critical UKCS gas infrastructure. We see natural gas and hydrogen as key transition fuels.



### ASSET

Riser platform,  
36" 404km gas pipeline,  
Reception and processing  
terminal on Teesside

**UK GAS PRODUCTION** c.25%

**CAPACITY** Pipeline: 1,700 MMscf/d

Processing: 1,200 MMscf/d

**OPERATOR** Pipeline/Terminal: Wood  
Riser platform: Everest Operator



### ASSET

Minimum facilities  
platform  
20" 48km gas pipeline,  
landfall at Easington

**CAPACITY** c.300 MMscf/d

**OPERATOR** ODE AM

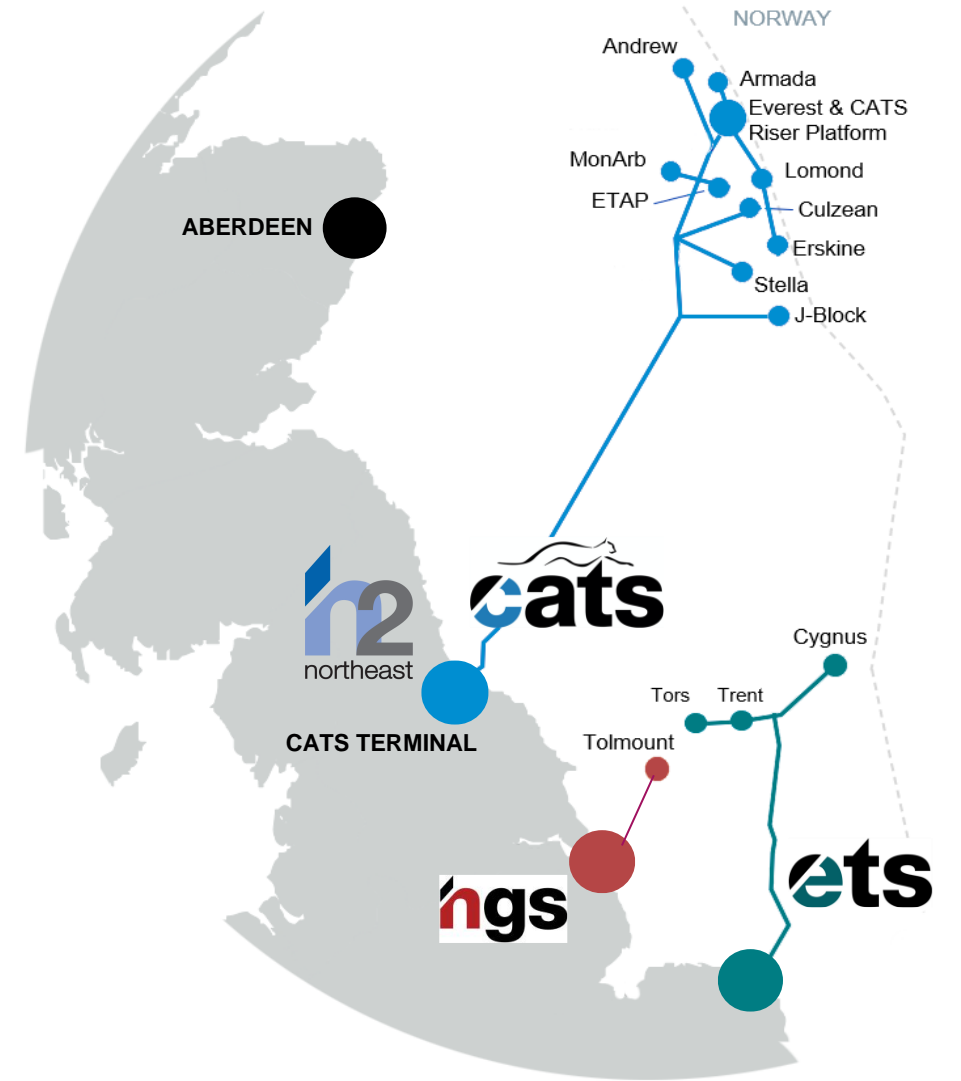


### ASSET

24" 165km gas  
pipeline, landfall at Bacton

**UK GAS PRODUCTION** c.10%

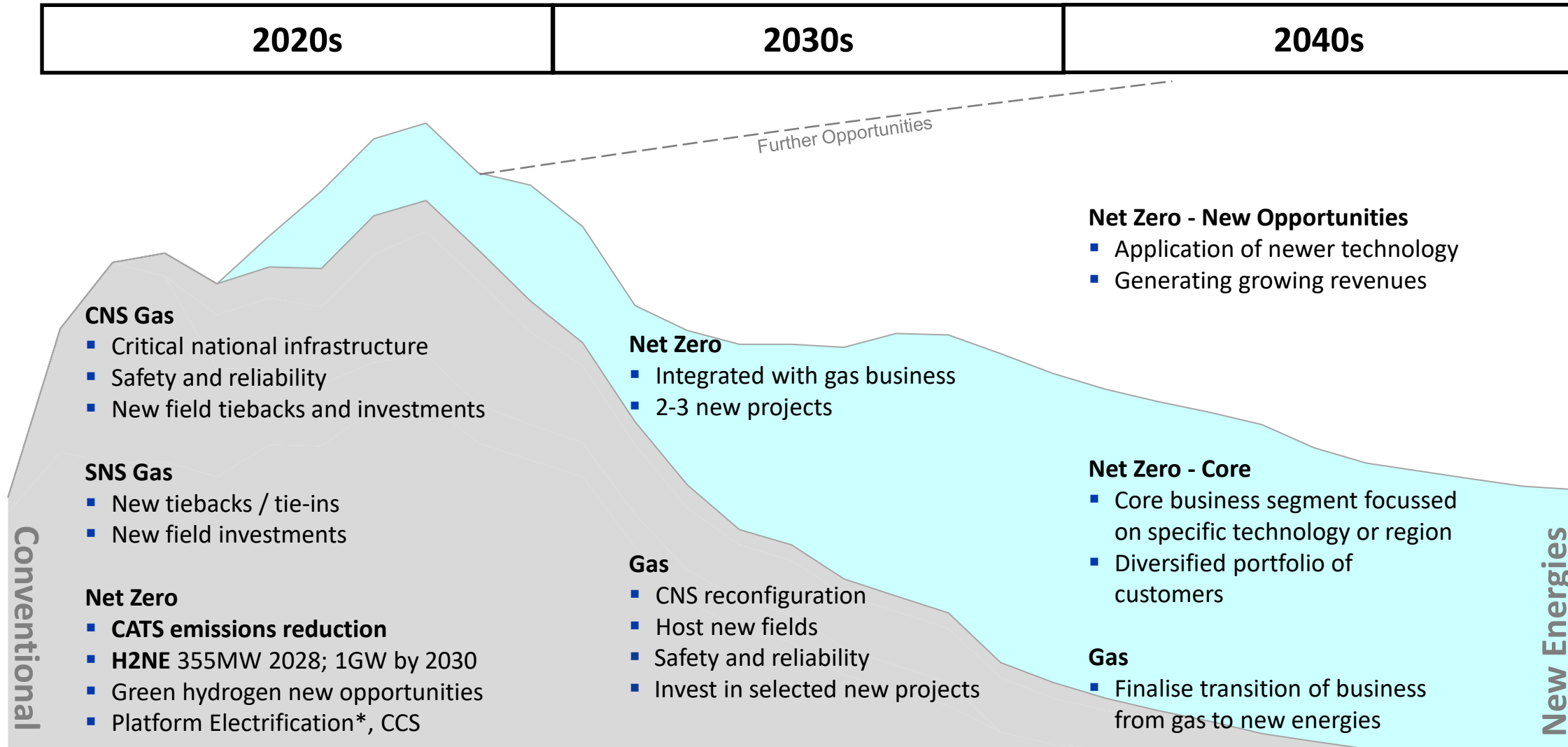
**CAPACITY** c.300 MMscf/d





# Kellas: Energy in Transition

*Kellas is a gas transportation and processing infrastructure business that is transitioning to new energies through steady and targeted investment.*



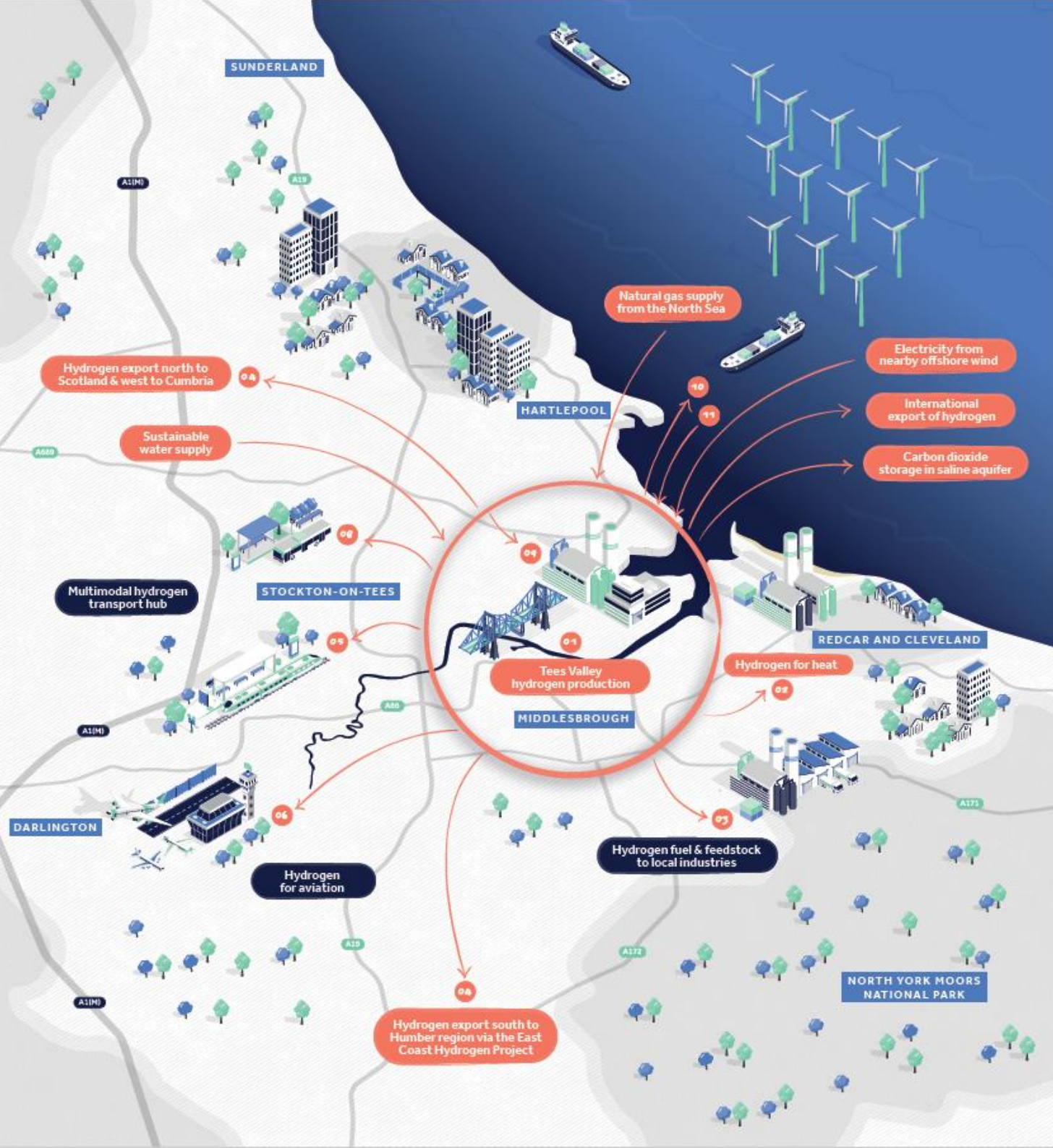
\* in 2020 Kellas Midstream, ABB and Aker Solutions formed an alliance for UK platform electrification, delivering a detailed concept that was value accretive for the CNS



# Teesside

## A Vision for Hydrogen

- Playing a vital role in helping the UK achieve its 2050 net zero ambitions
- Becoming one of the world's first decarbonised industrial clusters through production, consumption, and export of low carbon hydrogen
- Close to:
  - Industry seeking to decarbonize
  - Developing hydrogen infrastructure
  - Growing offshore wind pipeline
- Kellas – boosting the local economy
  - Bringing high-quality jobs to the region
  - Creating opportunities for skills development
  - Supporting local supply chain
  - Developing the next generation of engineers through University scholarships



# H2NorthEast

Producing low carbon hydrogen at scale



H2NorthEast commenced FEED in August 2023 with Worley and Johnson Matthey



1200 jobs during construction, 400 high-quality jobs long-term\*



Ready to deliver >355MW in 2028  
Upscale to >1.0GW by 2030



2028 – 0.6 MT pa CO<sub>2</sub> captured and stored  
2030 – >2 MT pa CO<sub>2</sub> captured and stored



Synergies with CATS  
Ideally located at CATS terminal on Teesside



Design life 25 years



\*approximate numbers based on economic evaluation



# Green Horizon H2

## Exploring gigawatt-scale production on Teesside



### RWE

RWE partnership to jointly explore green hydrogen production on Teesside



We are leveraging our leading positions in energy infrastructure and renewables



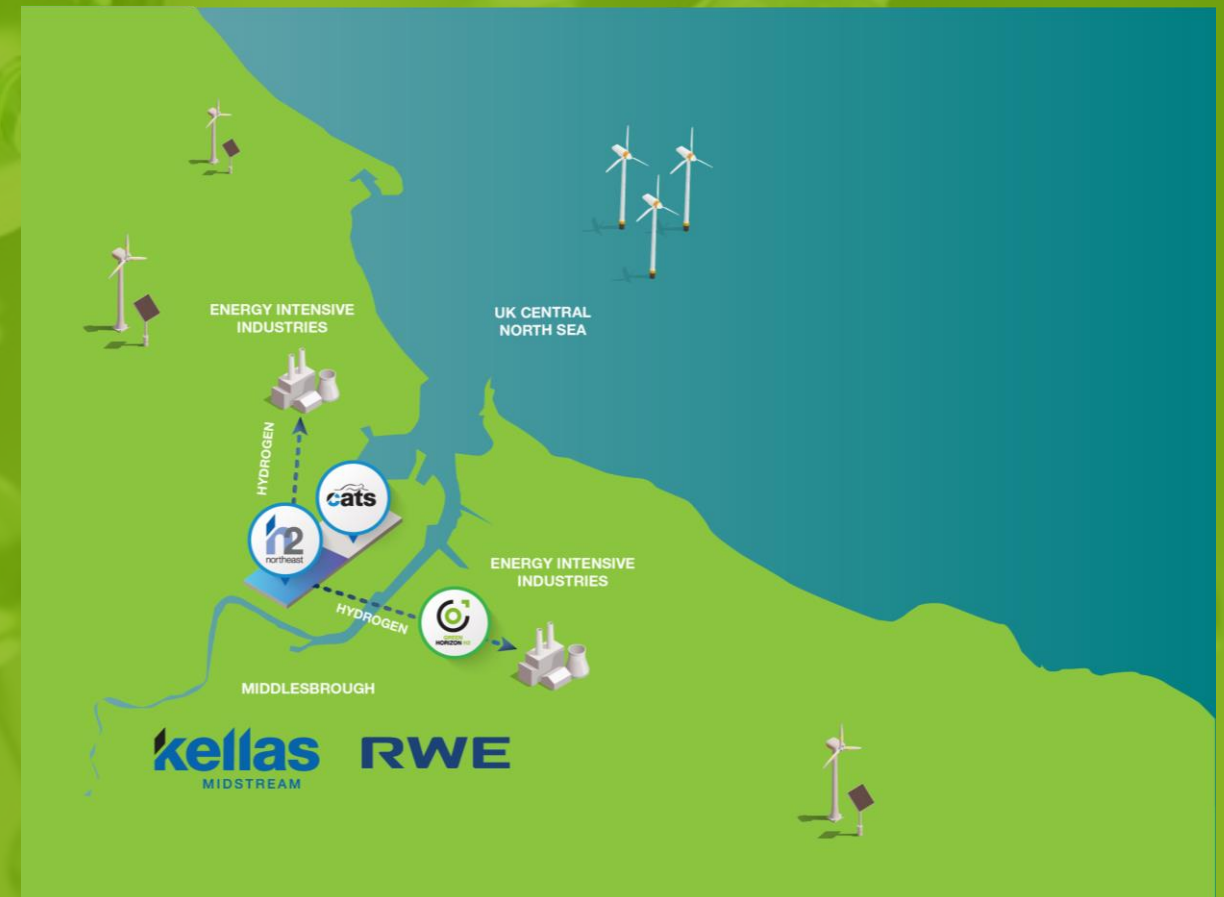
We understand the H2 landscape and are building a leading position in low carbon green hydrogen



We are backed by world-leading investors fully committed to low carbon infrastructure solutions for the UK



We are aligned with hydrogen customers and can offer real insight into their ambitions and expectations



# Emissions Reduction Activities

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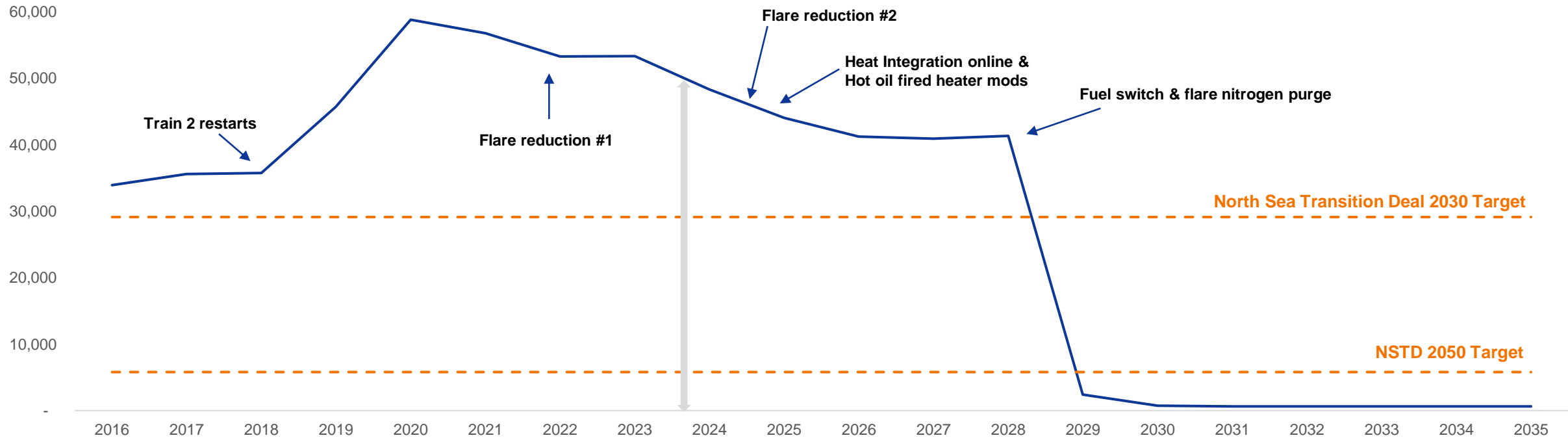


# Emissions Journey



Scope 1 emissions declining since 2019/20 through investment & focus; Kellas Scope 2 emissions have been zero since 2018

Kellas Historic and Forecast Scope 1 Emissions (tCO<sub>2</sub>eq)



# Project Canary: CATS Baseline



Methane is a potent GHG; 12 Canary X methane sensors installed; no detectable fugitive emissions; 1st use of **Project Canary** outside USA; experience shared with industry

## CONTINUOUS METHANE EMISSIONS MONITORING AT CATS

Kellas is committed to providing accurate and transparent emissions data including fugitive methane emissions.

In 2021 we partnered with Project Canary, a US-based ESG data analytics company that has developed pioneering emissions software technology to continuously monitor methane emissions.

CATS installed 12 Canary X methane sensors at strategic locations around the terminal in December 2021 in what was the first application of Project Canary technology outside the US.

The sensors were commissioned in 2022 and now provide continuous methane monitoring to an accuracy of 250 ppb.

The technology achieved reliable operation through 2022 and the data consistently showed background level methane and no detectable fugitive emissions at CATS. This supports the findings of our regular walk-arounds and confirms our belief that there are no issues with fugitive emissions. The system picked up an emissions event from a neighbouring site in 2022, with the wind speed and direction monitors on the Canary units allowing the event source to be accurately determined.

We have shared our experience with the continuous emissions monitoring technology with other sites and the wider industry.






# Emissions Reduction Project Summary

The CATS Emissions Reduction/Energy Efficiency team have been in place since 2019 and are driving the projects which will ultimately decarbonise the CATS terminal

## Baselining: accuracy is critical

- **Flare Master** – highly accurate meter measuring low pressure flare throughput; allowed CATS to conduct pressure build-up tests (PBU) to identify passing valves, which were then repaired or replaced
- **Project Canary** – on site methane detectors, confirmed presence of only background methane levels (i.e. no methane emissions)

## Completed & Ongoing Projects

Project	Description	Effect (over lifetime of asset)
<b>Flare Emissions Reduction Phase 1</b> 	Installed Flare Master in December 2022 - allows highly accurate PBU tests to be carried out	Saved <b>29,500 tCO2eq</b> (4% reduction)
	Identified passing pressure control valve in Turbo Expander lube oil system in 2022	Saved <b>115,000 tCO2eq</b> (14% reduction)
<b>Heat Integration</b>	Reduce the load on hot oil fired heaters by pre-heating sales gas with waste heat from gas treatment process  Online 2H 2024	Forecast to save <b>59,000 tCO2eq</b> (8% reduction)
<b>Flare Emissions Reduction Phase 2</b>	Identify and overhaul passing valves during 2024 TAR	Forecast to save <b>8,300 tCO2eq</b> (1% reduction)
	Overhaul of flare tip pilot burners, new tips are 35% more efficient	Forecast to save <b>2,500 tCO2eq</b>
<b>Hot Oil Fired Heater: air leakage reduction</b>	Modify the design of the hot oil fired heaters to reduce air leakage and so improve combustion efficiency	Forecast to save <b>7,000 tCO2eq</b> (1% reduction)
		<b>Lifetime reduction: 221,000 tCO2eq</b>

# CATS Emissions Look Ahead

*Emissions reduction beyond 2025*

**H2NorthEast** online in 2028 - enabling CATS to substantially decarbonise operations

- Current lack of readily available hydrogen and nitrogen
- H2NorthEast hydrogen and nitrogen will be available for use in emissions reduction efforts

## Heater Fuel Switch to Hydrogen

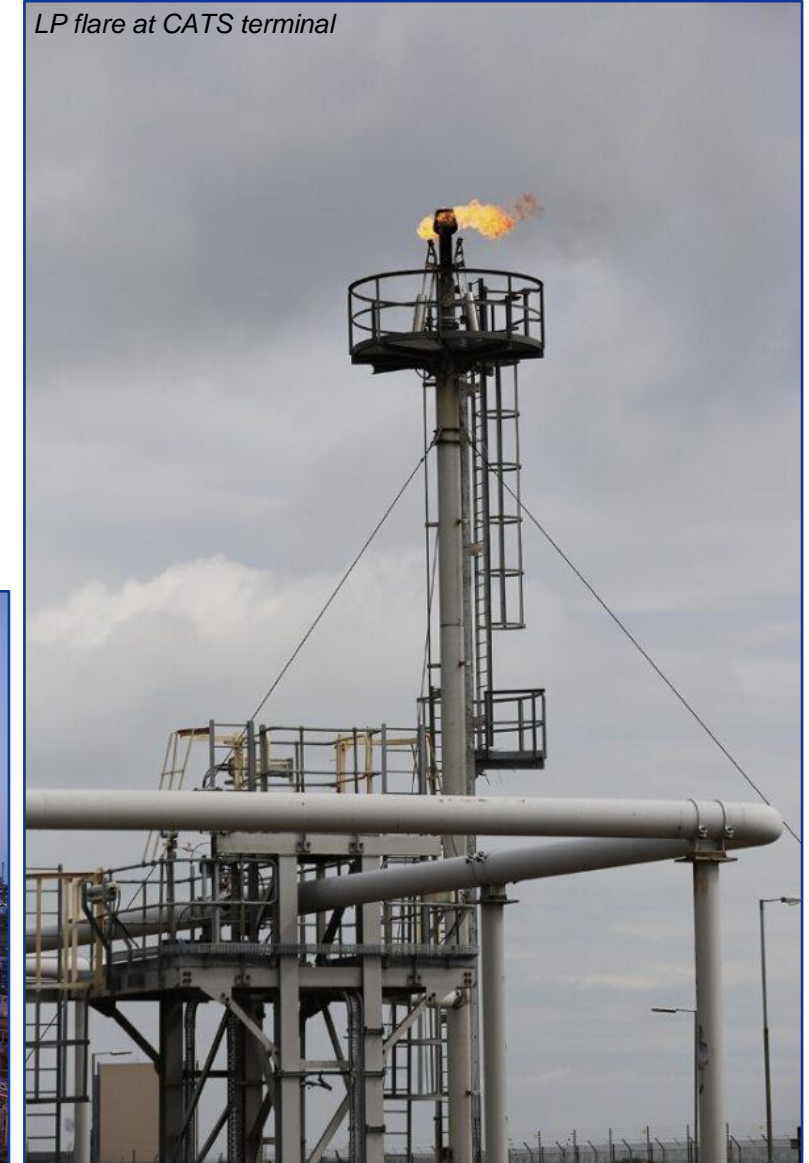
- Emissions from fuel gas combustion at the hot oil heaters
- Project to fuel hot oil heaters with purchased hydrogen: 100% fuel gas → 95% hydrogen and 5% fuel gas
- GHG emissions from CATS terminal will fall by 95% to annual average<sup>1</sup> of 752 tCO<sub>2</sub>eq

## LP & HP Flare Nitrogen Purge

- The CATS flares are safety critical elements, used to safely dispose of process gas (during an emergency or planned maintenance activities)
- The CATS flare must be kept free of oxygen, and a small flow of natural gas is currently used to do this, which is burned (rather than cold vented) resulting in CO<sub>2</sub> emissions
- When H2NorthEast comes online, CATS will purge the flare with nitrogen reducing CO<sub>2</sub> emissions



CATS terminal



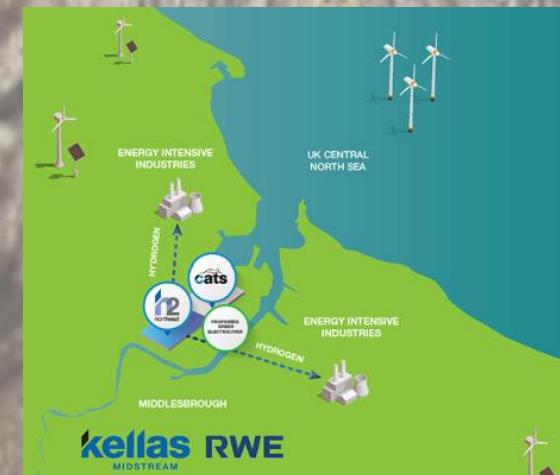
LP flare at CATS terminal

(1): Averaged over the period 2028 - 2046

# Kellas: Summary

*Kellas is transitioning its assets and business model whilst remaining committed to investing in UKCS energy infrastructure*

- Gas is Kellas' core business today; it is an important **transition fuel** and **feedstock** for low-carbon hydrogen production
- We are committed to supporting UKCS gas; reducing the UK's supply gap with lower emissions intensity gas
  - Invest, build, own, operate (e.g. Tolmount platform, *MER Award 2018*)
- We support responsibly developing and processing gas, including decarbonising our current operations
- Kellas' New Energies team is building a new **low carbon business** segment
  - **H2NorthEast** Phases 1 and 2
  - **Green Horizon H2**
  - Seeking other net zero investment opportunities





**Thank you**

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