



# Drax Group Capital Markets Day

19 November 2019

# Agenda

## Strategy Update and Biomass Opportunities

- Will Gardiner, CEO

## Biomass Sustainability

- Dr Rebecca Heaton, Head of Climate Change

## Q&A

## Biomass Operations and Cost Reduction Initiatives

- Andrew Koss, CEO Generation

## Finance Update

- Andy Skelton, CFO

## Q&A





# Strategy Update and Biomass Opportunities

Will Gardiner, CEO



# Introduction

**Drax has a clear purpose: to enable a zero carbon, lower cost energy future**

**Drax has a clear strategy**

- To be the leading provider of power system stability
- To give our customers control of their energy
- To build a long-term future for sustainable biomass

**Over the last four years, Drax has successfully transformed and significantly increased profitability**

**The next step in our journey to deliver our purpose and strategy**

- Increase biomass self-supply to five million tonnes and reduce the cost to c.£50/MWh



# The Imperative for Decarbonisation is Increasing

UK is the first country to legislate to achieve net zero carbon emissions by 2050 (July 2019)

The UK decision was taken following:

- Visit to Parliament by teenage activist Greta Thunberg (April 2019)
- Extinction Rebellion protests (April 2019)
- Committee on Climate Change (CCC) report on net zero (May 2019)
- David Attenborough's *Climate Change: The Facts* (May 2019)
- Intergovernmental Panel on Climate Change (IPCC) report on Global Warming of 1.5°C (August 2019)

*The UK has officially  
declared a climate  
'emergency'*

TIME



*UK Parliament  
declares climate  
change emergency*

## The transition to net zero informs our Purpose



# UK Net Zero Carbon Emissions

A challenging but clear route to net zero by 2050

## Power

- Wind, solar, biomass, gas and ultimately hydrogen

## Transport

- Electrification, limited biofuel for HGVs

## Buildings

- Insulation, hybrid heat pumps

## Industry and aviation

- Carbon capture and carbon negative generation, such as BECCS, required to support sectors where abatement is difficult

## Committee on Climate Change Report (May 2019)

*“We have assumed overall bio resource available to the UK of around 200 TWh...*

*...This is equivalent to around 10% of UK primary energy consumption in 2050. Of this, 173 TWh goes into BECCS in 2050, providing 51 MtCO<sub>2</sub> of removals.”*

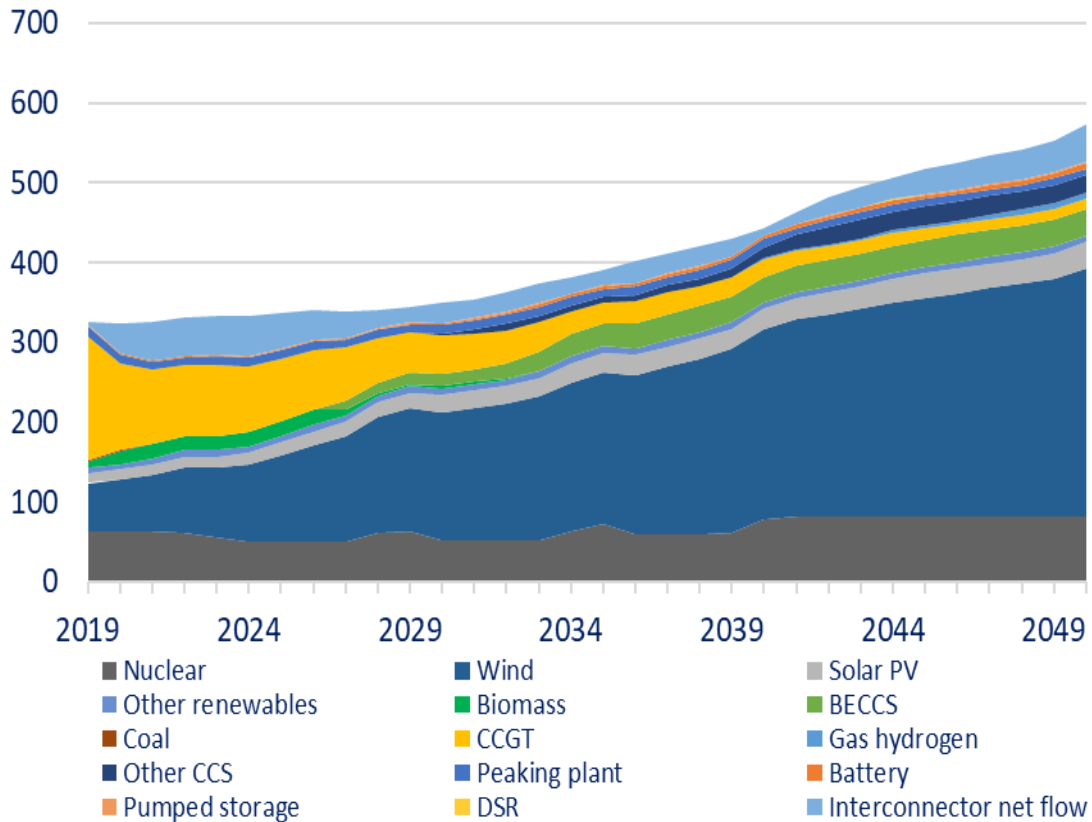
*“Deployment of sustainable bioenergy with CCS (BECCS) will need to start sufficiently early (e.g. by 2030) to build up to a potentially large contribution from BECCS in the longer term.”*



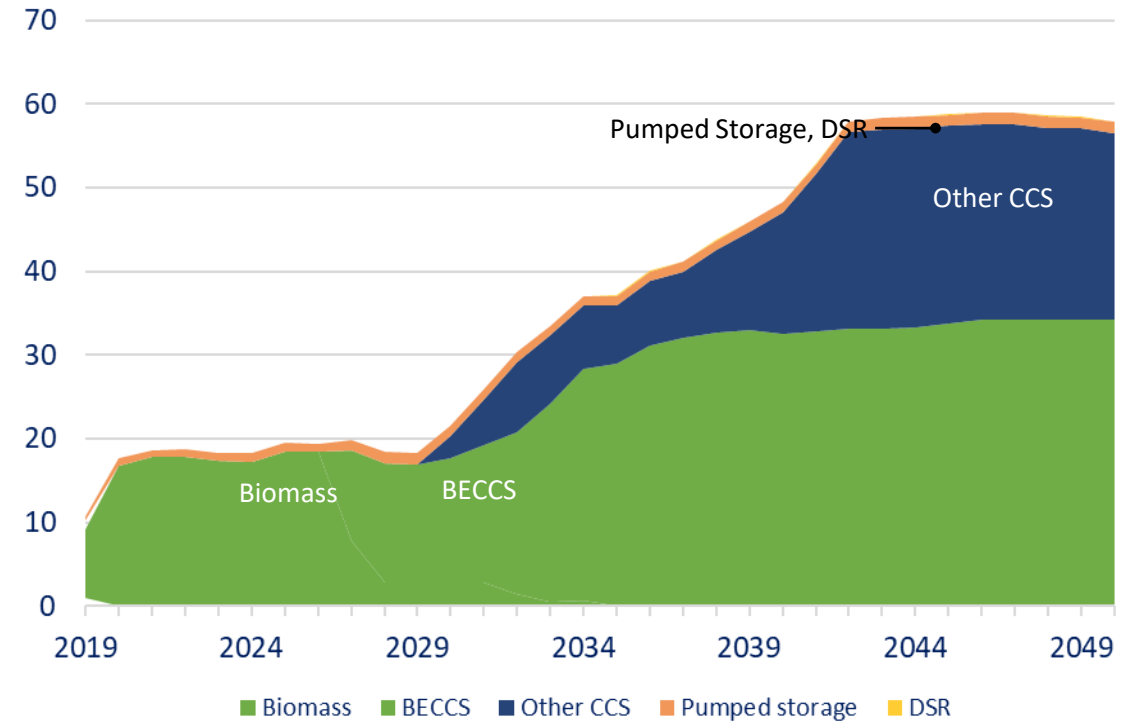
# The Future UK Generation Mix

Increase in intermittent renewables, retirement of current thermal fleet and increased electricity demand

Generation mix to 2050 net zero (TWh)



Drax areas of focus (TWh)



Biomass has a long-term role to play

Pumped storage and hydro has a long-term role to play

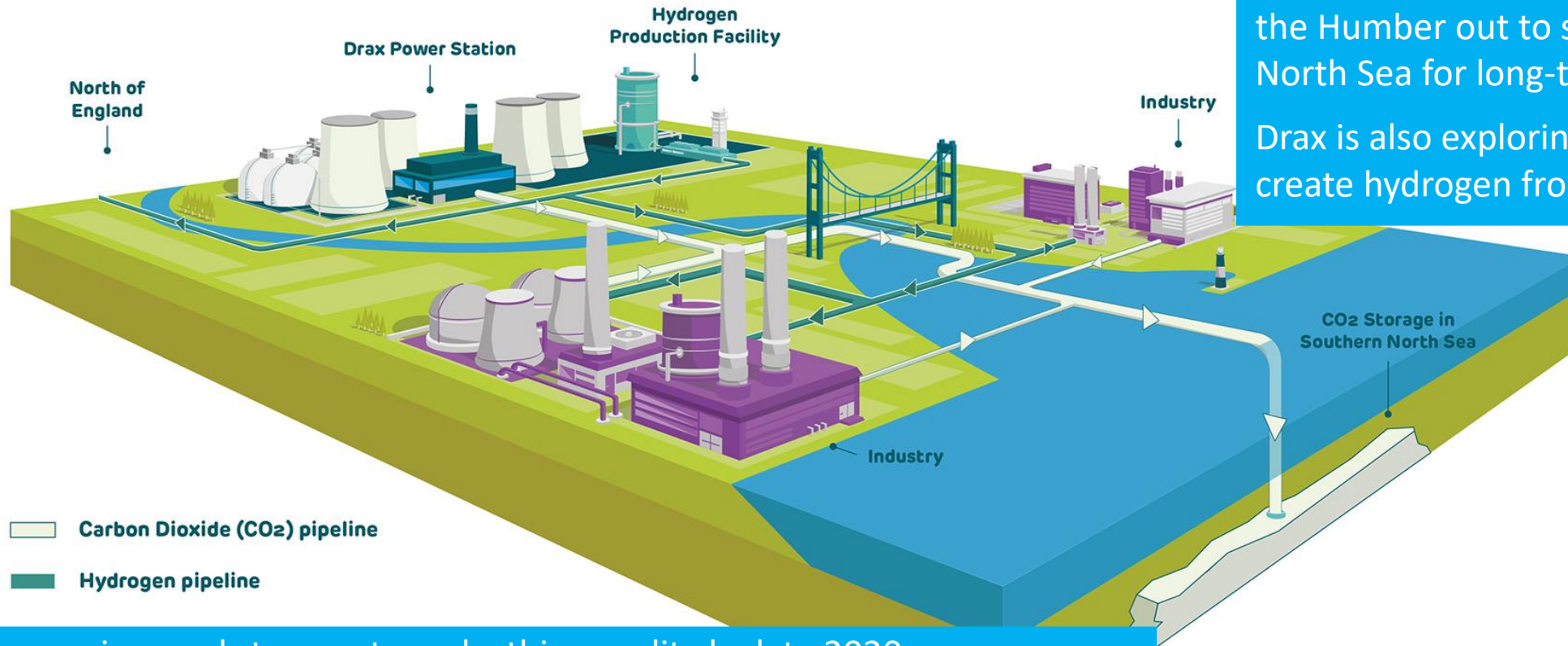
Future gas generation – convert to hydrogen and gas with CCS



# Bioenergy Carbon Capture and Storage

## A low-cost Negative Emissions Technology “NETS”

Net Zero Humber Cluster



Drax will capture CO<sub>2</sub> from biomass and pump that into a pipeline along the Humber out to storage under the North Sea for long-term storage

Drax is also exploring the potential to create hydrogen from CO<sub>2</sub>

Progressing workstreams to make this a reality by late 2020s

- Technology options
- Government policy
- Biomass cost reduction





## Our Purpose

Enabling a  
zero carbon,  
lower cost  
energy future

19 November 2019

## Our Strategy

We will be the leading provider of power system stability

- A portfolio of dispatchable flexible assets to support the energy systems growing use intermittent renewable energy

We will give all our customers control of their energy

- Through insight and digitisation we will provide control over energy use and access to markets to optimise use, source and cost

We will build a long-term future for sustainable biomass

- A lower cost biomass supply chain with the potential for carbon negative generation – BECCS



# Drax Group Today

Enabling a zero carbon, lower cost energy future

## Multi-site, multi-technology portfolio

6.5GW capacity

- 2.6GW biomass
- 1.3GW coal
- 0.4GW pumped storage
- 0.1GW hydro
- 2.1GW CCGT

## Customers

Leading challenger brands

- Haven Power / Opus Energy

## US Gulf operations

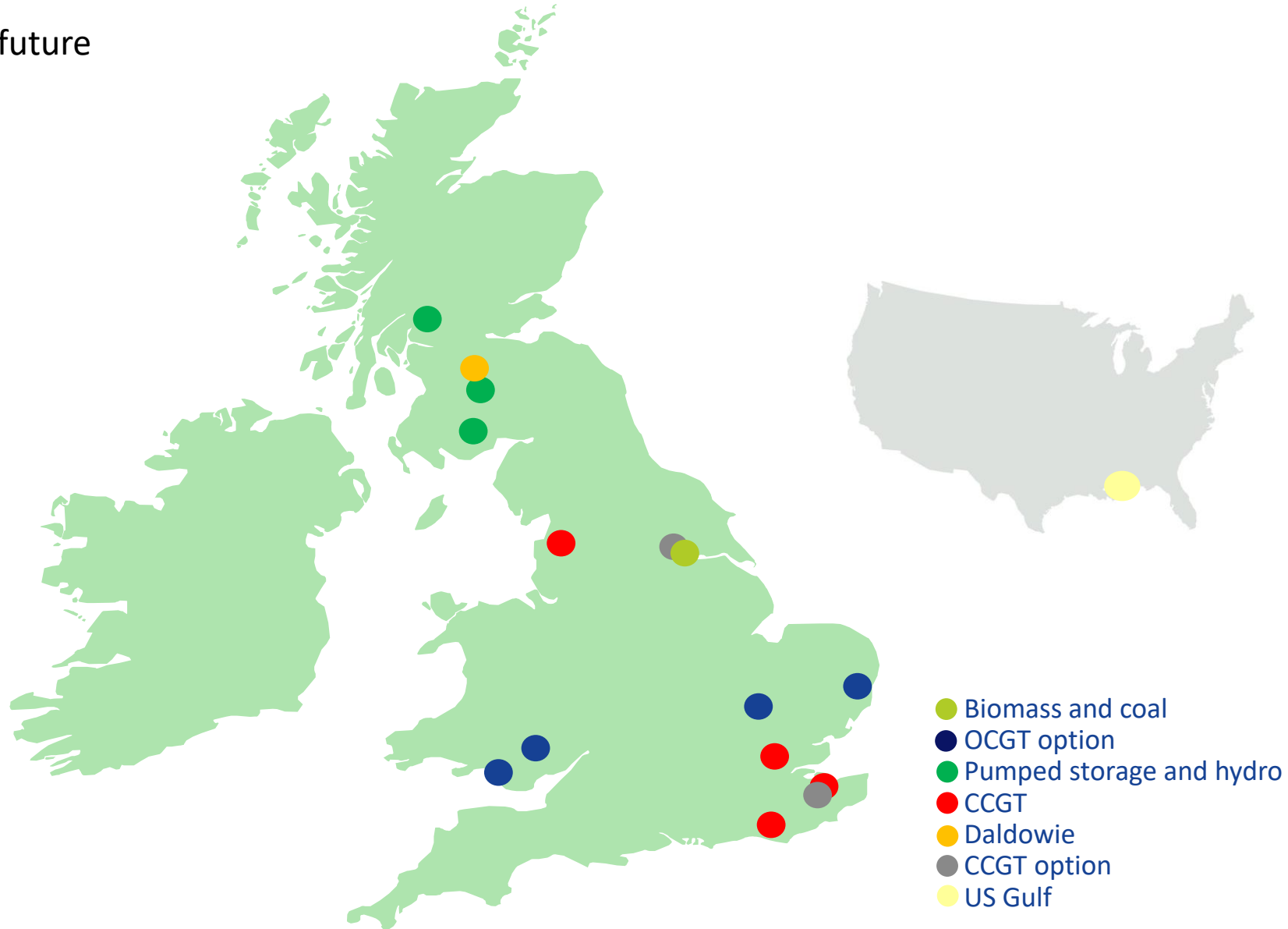
1.5Mt pellet capacity (0.35Mt planned expansion)

2.4Mt export facility

## Development options

Gas

Hydro expansion (Cruachan)

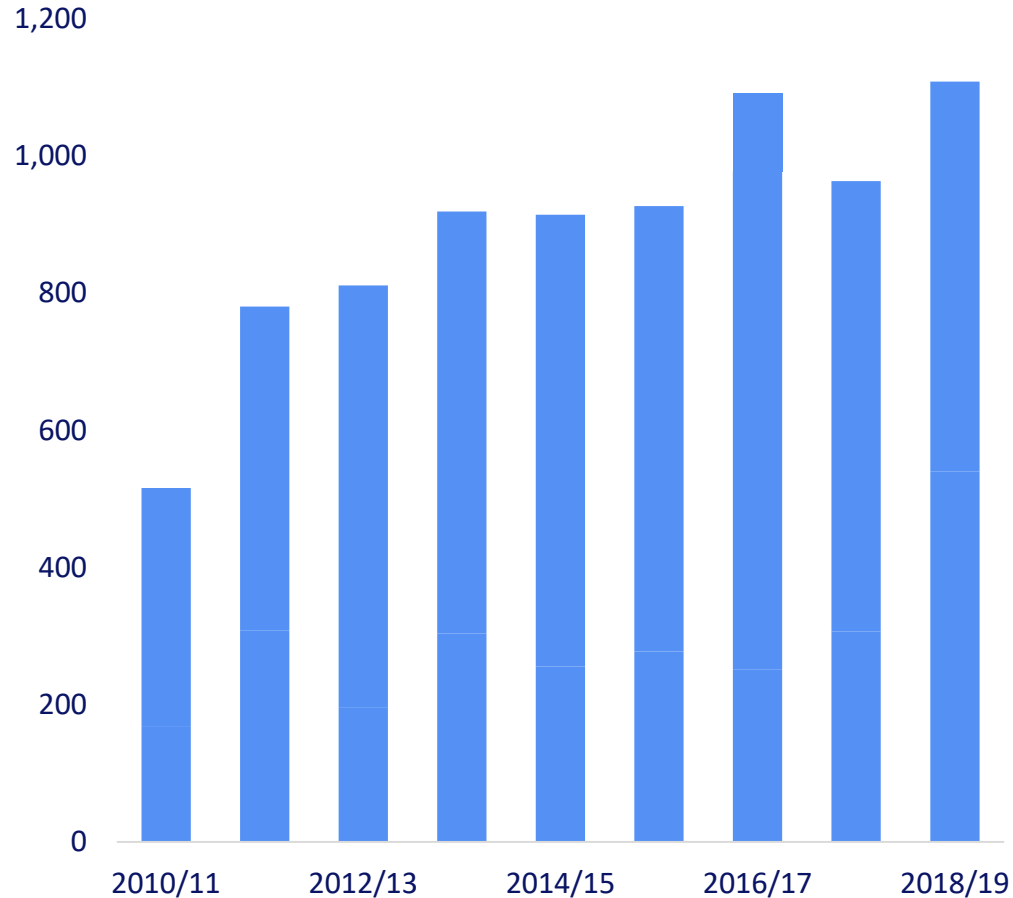




# Increasing Cost of System Support

Balancing Services Use of System (BSUoS) – a measure of the cost of managing the system

## Total BSUoS Costs (£m)



BSUoS cost includes a range of system support services

- Frequency response, reactive power, voltage control, inertia, blackstart, constraint management, headroom and footroom, reserve

Traditionally services provided by flexible thermal plant

- Coal and older gas now withdrawing from market

Costs are rising and number of capable providers reducing

- Only biomass, pumped storage and gas can provide large flexible plant capabilities



# System Support Underpins Our Investment in Pumped Storage and Gas Generation

Assets performing strongly

2.6GW of pumped storage, hydro and gas acquired December 2018

Attractive financial attributes unchanged

- EBITDA £90-£110m, inclusive of capacity payments
- Returns significantly in excess of WACC

High proportion of non-commodity related earnings

- System support services – Balancing Mechanism, Ancillary Services
- Capacity Market
- Option to operate in power market if attractive

Strong performance in system support markets

- Frequency response, reactive power, voltage control, inertia, blackstart, constraint management, headroom and footroom, reserve

Options for development of Cruachan pumped storage power station



- Pumped storage and hydro
- CCGT
- Daldowie
- CCGT option



# Development Options for Gas Generations

New gas generation will be required to support greater deployment of renewables and hydrogen

## Six attractive permitted development options

### 4 x 0.3GW OCGT sites

- Fast response assets for system support services

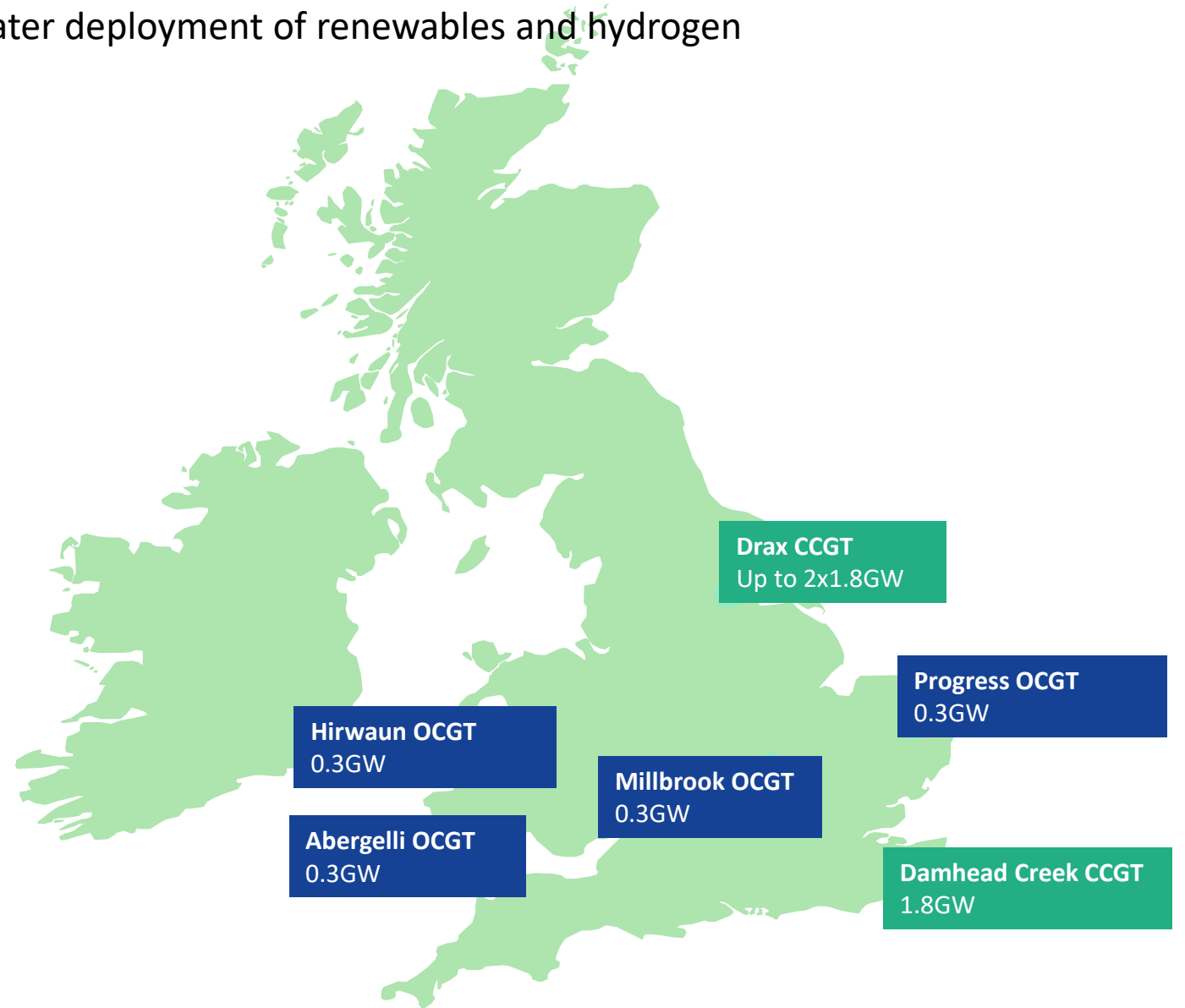
### 2 x 1.8GW CCGT sites

- Power generation and system support services
- Exploring options for greater utilisation of hydrogen

### Investment criteria

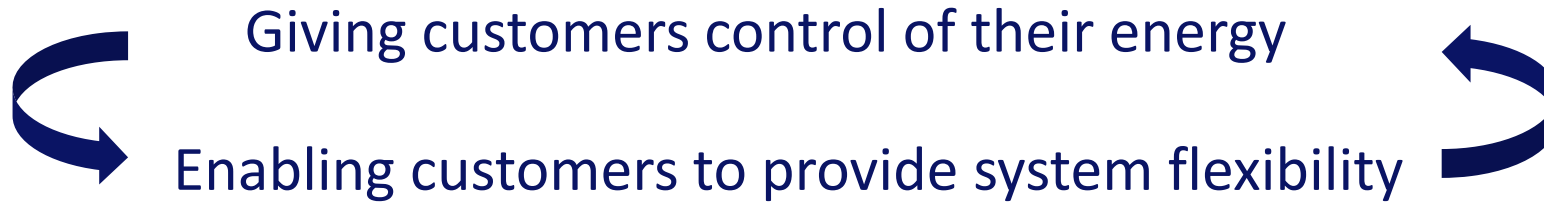
- Capacity Market contract
- Limited merchant risk
- Returns significantly in excess of cost of capital

Capital investment – consider partnering



# Customers

A core part of our strategy



## The leading B2B-only supplier

- ✓ Focus growth on profitable segments
- ✓ Successful operational excellence programme rolled out



Ongoing gross margin growth  
Operating cost efficiency  
Bad debt expense improvements

## Delivering renewable solutions

- ✓ Biggest B2B supplier of renewable energy
- ✓ Over 2,000 independent renewable generators



Sustainable earnings  
In growing markets  
From a vertically integrated renewable portfolio

## Meeting our customers evolving needs

- ✓ Investing in data analytics
- ✓ EV fleet roll out, aggregation and DSR now core products



Focused developments in a broad services market  
Using the technical skills of the Drax team  
Contributing to system support and balancing



# Why Biomass Has an Important Role to Play

Our Biomass Strategy:  
Ensure the long-term future of biomass power generation through world leading safety and sustainability, ongoing cost reduction and the delivery of negative emissions

## Supports forest growth and health

- Commercially managed forestry consumes more CO<sub>2</sub> than unmanaged
- Supports long-term investment in forest stocks

## Growing demand for flexible, low-carbon and renewable energy sources

- An important source of system support and security of supply
- The only large-scale flexible renewable source of power
- >11%<sup>(1)</sup> of UK renewable electricity

## Opportunity for large-scale carbon negative generation

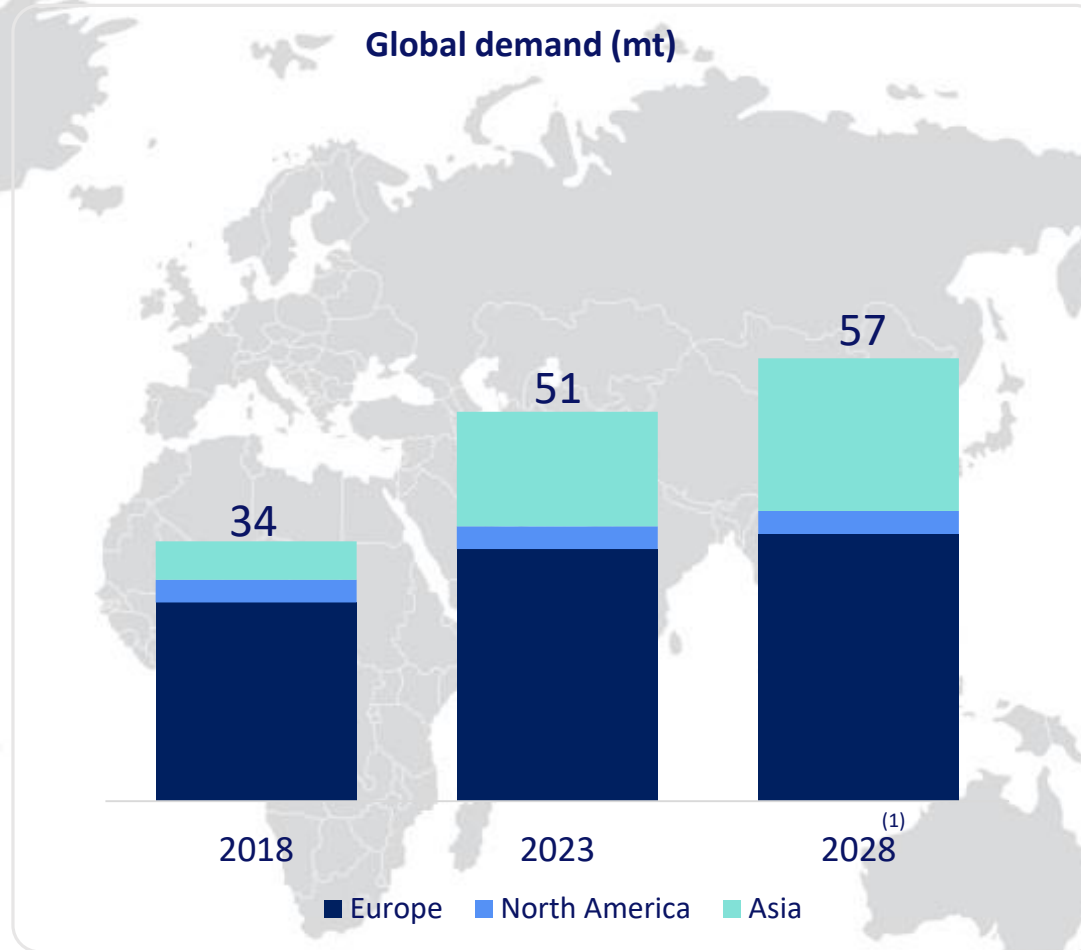
- BECCS required to deliver UK net zero 2050 target
- Attractive option subject to appropriate regulatory framework

# Global Wood Pellet Market Outlook

Stable global growth of industrial and heating markets

## Key drivers of price pressure

- Asian demand
- Pellet capacity



Source: Hawkins Wright – The Outlook for Wood Pellets (2019) / Drax

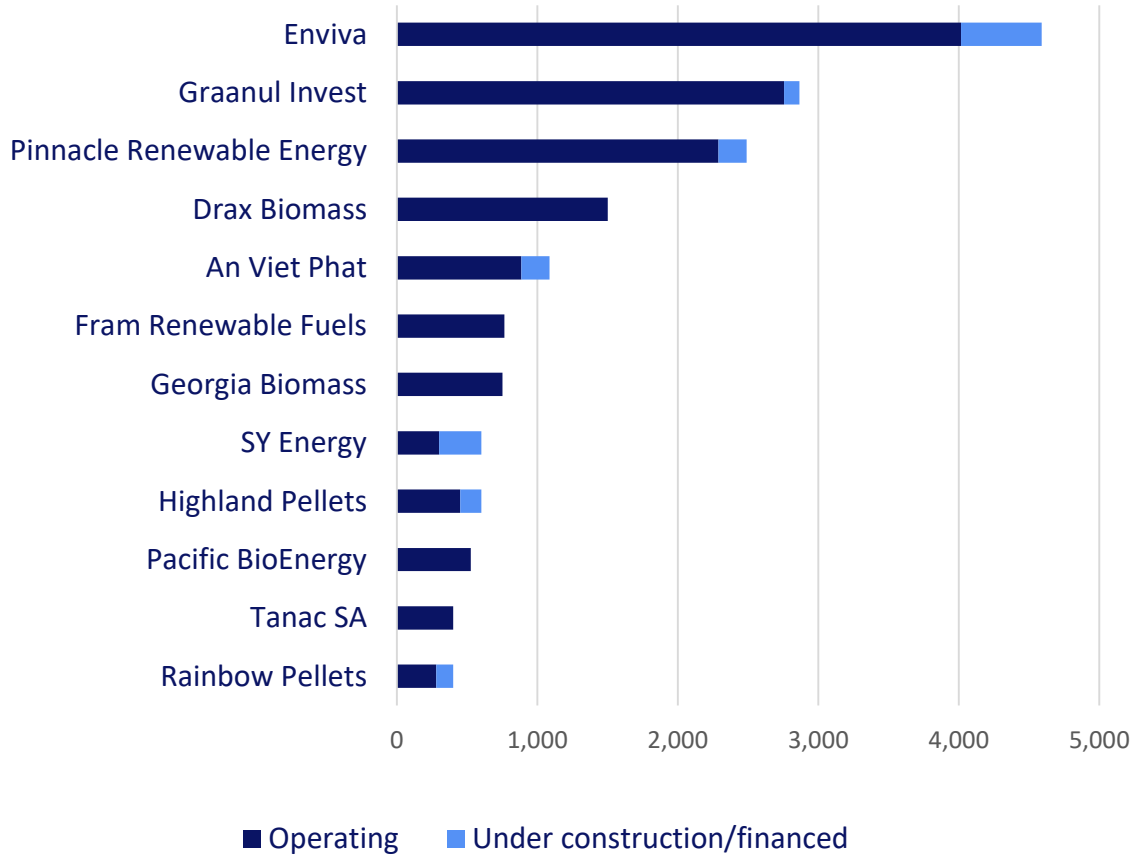
(1) Assumes closure of Lynemouth Power Station in UK and assumption of 7mt from Drax



# The Global Wood Pellet Market is Dominated by a Small Number of Larger Producers

Growing global demand for biomass

## Largest industrial wood pellet producers (kt)



## Drax position in global market

- 4<sup>th</sup> largest pellet producer
- Offtake agreements with other large suppliers

## 3<sup>rd</sup> party focus on Asian markets

- Long-term contracts to Asian markets post 2027
- Asia pricing at a premium to European

## Expansion of self-supply

- Protect supply
- Reduce cost
- Create long-term trading opportunities



## Our Biomass Strategy

Ensure the long-term future of biomass power generation through world leading safety and sustainability, ongoing cost reduction and the delivery of negative emissions

Creating the world's largest and lowest cost sustainable biomass supply chain

– c.£50/MWh by 2027

Increase self-supply to 5m tonnes pa

- 1.5mt (currently)
- 0.35mt expansion of existing sites confirmed (July 2019)
- Identifying opportunities for a further 3mt

Reduce cost

- Optimise production and logistics
- Utilise more low-cost residues
- Expand fuel envelope

Trading opportunities

- Service global biomass markets

Supported by strong sustainability criteria

Work to enable BECCS



# Targeting Five Million Tonnes of Self-supply Capacity

## Investment case

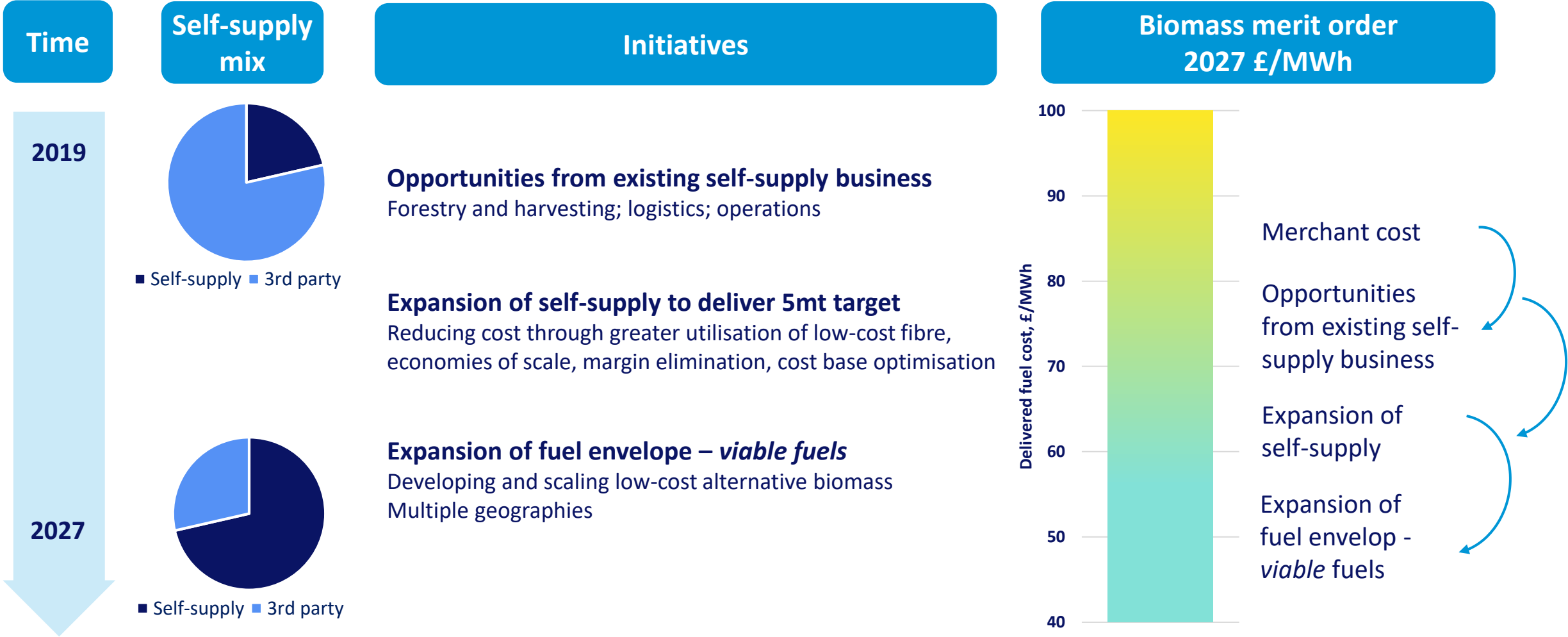
- Reduce cost
- Supports post 2027 operations
- Fast pay back, returns significantly in excess of WACC
- Security of supply
- Unlock new fuel supplies
- Opportunity to service global wood pellet markets – Europe, North America and Asia

## Development route

- Existing US Gulf plants (1.85mt)
- Expansion, including US Gulf satellite plants
- Alternative *viable fuels*
- Improvements to logistics and operations

# Cost Reduction Route

Backward integration of supply chain to reduce overall cost of biomass generation to c.£50/MWh



Underpinned by further opportunities in logistics and operations and work with 3<sup>rd</sup> party suppliers



# Fuel Envelope Expansion – *Viable Fuels*

Other non-wood biomass products

The potential to deliver 2-3mt of new sustainable biomass volumes by 2027

*Viable fuels* is **appraising and developing** a portfolio of projects that **expand the existing fuel envelope in terms of fuel type, form and geography**, in pursuit of delivering a **sustainable biomass basket post-2027**



## Origination & prioritisation

- 2018: circa 200 opportunities screened

## Fuel development

- 2019: first wave of opportunities undergoing feasibility

## “Enabling” projects

- 2019: capability requirements being pursued

## Illustrative opportunities

- 1mt sustainable wood chips
- 1mt bagasse (sugarcane residue)
- 1mt other agricultural and process residues

# Trading & Optimisation

## Capture value and manage risk

### Internal trading benefits

- Management of volume risk
- Portfolio optimisation
- Displace higher cost with lower cost fuels via cost reduction initiatives
- Adaptive to post 2027 environment – higher or lower demand
- Adaptive to development of BECCS options – higher demand

### External trading benefits

- Increase biomass market liquidity
- New market opportunities
- Development of long-term offtake post 2027
- Portfolio optimisation
- Market intelligence





## Summary

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