

Incitec Pivot Ltd

Ammonia Decarbonisation

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Incitec Pivot Limited
INNOVATION ON THE GROUND

DYNO
Dyno Nobel





ACKNOWLEDGEMENT OF COUNTRY

I'd like to start by acknowledging the First Peoples of the land, sea and waters across the various locations that we are living and working from today. I pay my respects to Elders past, present and emerging.

Incitec Pivot Limited Overview

PRIMARY BUSINESSES

DYNO[®]
Dyno Nobel



Publicly listed on the Australian
Stock Exchange (ASX:IPL)
~AUD5 BILLION
market capitalization

AUD4 BILLION
in annual revenues

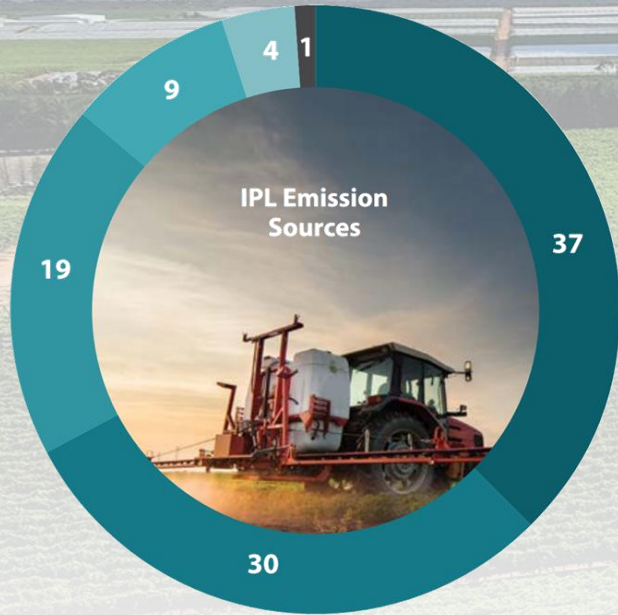
~5,000
EMPLOYEES

**DN IS #2 EXPLOSIVES
COMPANY GLOBALLY**
with primary markets in Australia and
North America, as well as Indonesia,
Turkey and Chile

**IPF IS #1 FERTILIZER
COMPANY IN AUSTRALIA**
with extensive distribution infrastructure throughout
the East-coast. IPF is the only manufacturer
of MAP/DAP fertilisers in Australia

7 OWNED
AMMONIA MANUFACTURING FACILITIES
3 in USA, 3 in Australia, 1 joint venture

Our Baseline Year (2020) operational GHG emissions by source (%)



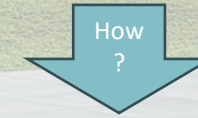
GHG emission source and reduction technology required to reduce

- **Natural Gas for H₂ (Ammonia Feedstock)**
CCS to permanently sequester, conversion to green hydrogen production, other alternative feedstocks
- **Natural Gas to drive the ammonia feedstock reaction⁽¹⁾**
CCS to permanently sequester, conversion to green hydrogen production, other alternative feedstocks
- **Nitric Acid N₂O Process Emission**
N₂O abatement technologies
- **Scope 2 Electricity**
Rooftop solar installations, PPA's, grid decarbonisation
- **Scope 1 Electricity (Natural Gas)**
Industrial scale solar installation with batteries, grid connection and PPAs
- **Other**
Electric on-road vehicles and excavators

(1) >95% of our 'natural gas for energy' use is to drive the reaction to convert methane, CH₄ to H₂, for ammonia making in our ammonia plant reformers.

Insights;

- 95% of emissions from manufacturing
- 67% of emissions are from ammonia production
- Almost 20% of emissions are from nitric acid production
- Decarbonising power supply does not 'turn the dial'
- **Reducing emissions from ammonia is our biggest lever**



What we have considered:

- Tertiary abatement of N₂O emissions from NA plants – easy wins
- CCS – geological
- Mineral carbonation
- Methane pyrolysis
- Behind the meter green conversion
- Behind the meter green H₂ blending
- Green NH₃ imports and blending
- 'Over the fence' hydrogen supply
- Emerging technologies for green NH₃

IPL Group Emissions and Decarbonisation Approach

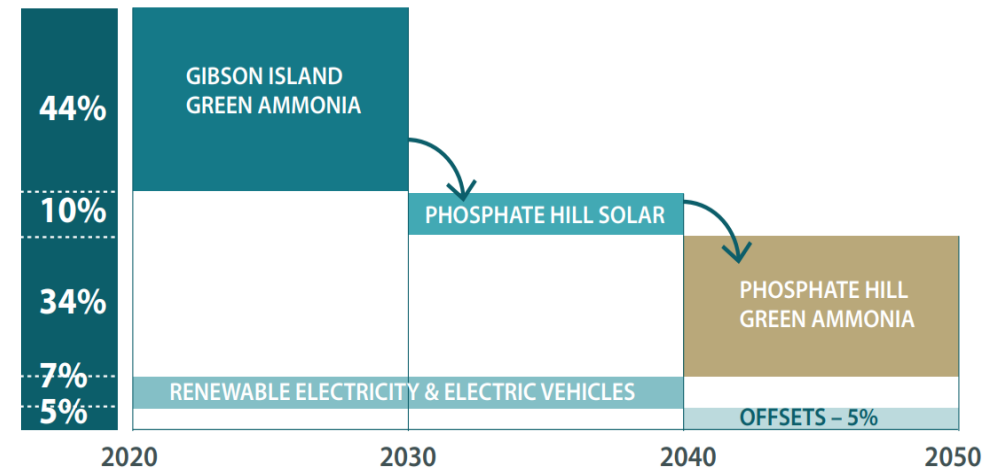
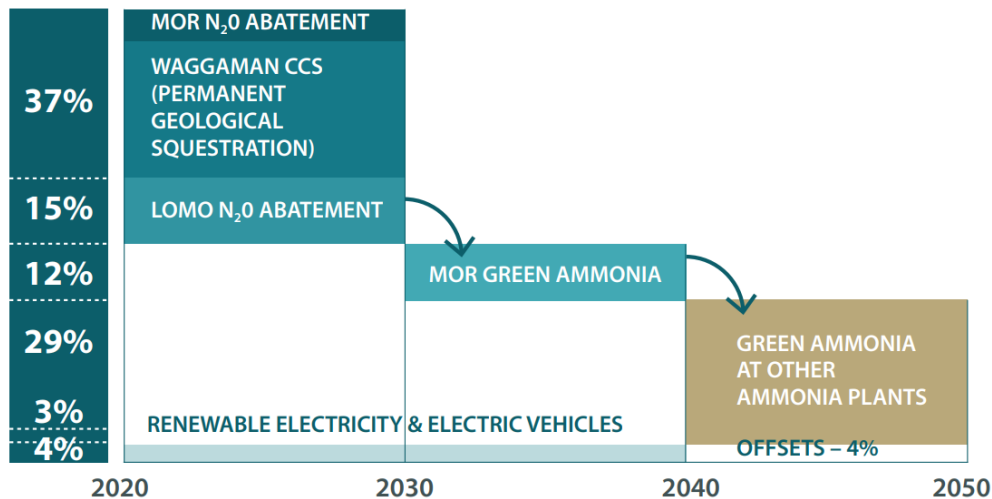
Net Zero Transition

Dyno Nobel Transition Pathway

- N₂O Tertiary Abatement projects at Moranbah, Qld and Louisiana, Mo are committed
- CCS to decarbonise Waggaman, La well advanced (geological storage)
- Green ammonia is challenging, and strategy is to progress multiple decarbonisation opportunities concurrently to maintain flexibility

Incitec Pivot Fertilisers Transition Pathway

- Advanced planning for Gibson Island green conversion targeting FID Q4 2023
- Planning for Phosphate Hill conversion of gas power plant to solar, in conjunction with multiple electrification projects
- Green NH₃ at Phosphate Hill – economic feasibility drives timing
- All power options improved by Qld Government Copperstring investment





Dyno Nobel America

- ~1Mtpa CO₂ to be sequestered into permanent geological storage
- The Waggaman plant (KBR Technology) was built carbon capture ready
- Dyno Nobel to invest in compression and dehydration – engineering well advanced
- Third party to transport and sequester CO₂
- Investment supported by 45Q tax credits
- FID Q4 2023

Waggaman CCS Project

Incitec Pivot Fertilisers

Fortescue Future Industries

- World first full ammonia plant conversion from SMR to green hydrogen
- Transition from urea manufacturing to NH3 for export to domestic and overseas markets
- 550MW Electrolyser developed by FFI
- Uprate of NH3 plant to 400 ktpa
- Includes steam to power conversion
- Upgrades to export infrastructure
- FID targeted for Q4 2023

Gibson Island Green Conversion

Converted & uprated
IPL ammonia plant



Visual of FFI Green
Hydrogen Facility





Keppel Infrastructure & Dyno Nobel Asia Pacific - Project in Development

- Key off-taker for the CQH2 Green H₂ project
 - Up to 50% of H₂ production reserved for NH₃
- Flagship green H₂ and NH₃ project for Qld with top multinational partners driving development and offtake at scale
- 850 ktpa ammonia plant and export facility with domestic truck out-loading is proposed
- Forms an integral option for transition of our Moranbah plant to green AN production
- Carbon-unconstrained growth project representing a risk managed entry to ammonia for energy markets

Gladstone Green Ammonia

CQ-H2 Consortium

stanwell **Marubeni**
Keppel Infrastructure

Iwatani **Kansai Electric Power**
Iwatani Corporation power with heart

CQH2 Aldoga facility concept design feeding a pipeline to the new green ammonia plant at Gladstone



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IPL Learnings

- **Geology, geography and technology readiness determined our decarbonisation pathways and strategic focus**
 - *In the USA there is infrastructure, favourable geology and a financial mechanism that supports CCS and blue ammonia*
 - *In Eastern Australia there are renewable resources, Government electrification investments and a lack of mature CCS options which drives green ammonia*
 - *Emerging renewable ammonia technologies are not yet 'ready to disrupt'*
- **Quality of partners and proponents matters**
 - *It is difficult for Governments, regulators and off-takers to distinguish projects with true merit from new entrants with good pitches*
 - *Off-takers with stakes up and down the supply chain are driving the increase in renewable ammonia demand*
- **Renewables profiles and integration with electricity markets really matters when it comes to green NH₃**
 - *Dynamic green NH₃ plants are critical to keeping the LCOH in a tolerable window*
 - *The trade-offs between uptime, capex, and energy storage are complex*
- **Government subsidies are essential for the early movers to deliver**
 - *Priority should be given to projects that drive scaling and industry development*
- **Its harder and takes a lot longer than you think!**
 - *Our projects are reaching FID after 3+ years in development*



Thank you

