TOP END ENERGY
THE ENERGY OF TOMORROW

LEADING AUSTRALIA INTO A LOW-CARBON ENERGY FUTURE

UNLOCKING KEY OPPORTUNITIES IN THE NORTHERN TERRITORY PORTFOLIO

SEPTEMBER 2024

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INVESTMENT HIGHLIGHTS

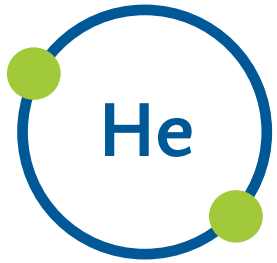
NEAR TERM ACTIVITIES SET TO MATURE HIGH UPSIDE EXPLORATION POTENTIAL IN KEY ONSHORE BASINS

1. **MULTIPLE INDEPENDENT ONSHORE BASIN POSITIONS**
   GRANTED ACREAGE STRATEGICALLY LOCATED IN PROVEN YET UNDEREXPLORED AREAS
2. **NATURAL GAS, HELIUM AND HYDROGEN FOCUS**
   TARGETING MULTIPLE END PRODUCTS LEVERAGING COMMON EXPLORATION TECHNIQUES
3. **DEMONSTRATED ABILITY TO ACHIEVE STRATEGIC OBJECTIVES**
   ACHIEVED KEY TENURE AND GROWTH MILESTONES ALLOWING COMMENCEMENT OF WORK PROGRAMS
4. **WORK PROGRAMS DESIGNED TO UNLOCK NEAR-TERM VALUE CATALYSTS**
   FOCUSED LOW-COST ACTIVITIES TARGETING MEANINGFUL ASSET DE-RISKING
5. **COMPELLING MACRO ENVIRONMENT AND MARKET CONDITIONS**
   GROWING NEED FOR GAS WITH BI-PARTISAN SUPPORT FROM NT AND FEDERAL GOVERNMENTS

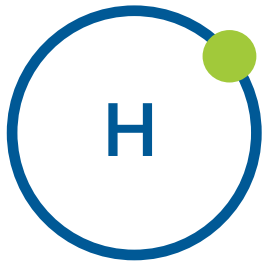
ACTIVE EXPLORATION AND DEVELOPMENT FOCUS ON MULTIPLE, COMPLEMENTARY ENERGY RESOURCES

UNLOCKING CRITICAL PRODUCTS TO DRIVE THE ENERGY TRANSITION

NATURAL GAS



HELIUM GAS



NATURAL HYDROGEN

1. MCARTHUR BASIN

One of Australia's most active gas exploration regions containing the Beetaloo sub-basin

2. SOUTH NICHOLSON BASIN

Underexplored natural hydrogen, helium and conventional hydrocarbon potential

3. AMADEUS BASIN

Existing hydrocarbon system with untested and historically overlooked margin extension opportunity

4. ADAVALE BASIN

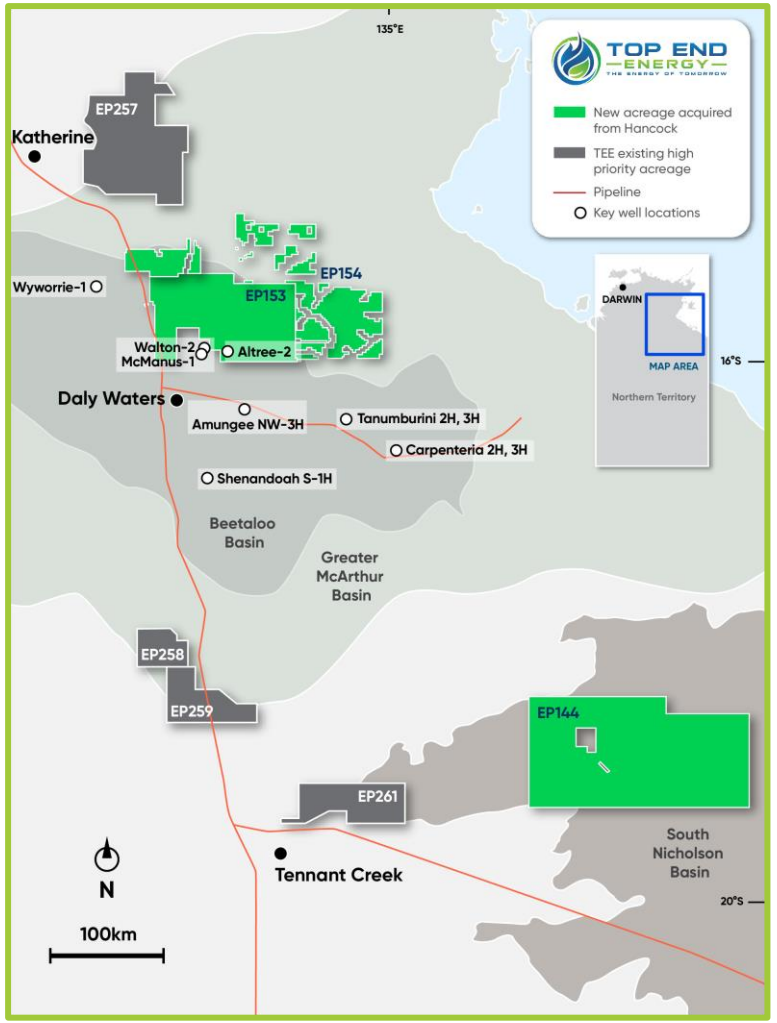
Proven producing region with material conventional gas prospect identified

FEBRUARY 2024

ACQUISITION OF GRANTED NT PERMITS[1]

TWO PROVEN BASINS WITH MULTIPLE PLAY POTENTIAL

- **Consistent with strategic and technical focus** on basin margin play opportunities targeting natural Hydrogen and Helium with complimentary hydrocarbon potential
- **Granted permits with key native title agreements in place** and progressed land access and regulatory approvals
- **No upfront consideration** and limited near-term expenditure commitments[2]
- **Four-fold increase in granted licence tenure** with flexibility to accelerate high-value activities (new permits cover a combined area of 27,885km^2)



DELIVERED CLEAR TECHNICAL ALIGNMENT AND OPERATIONAL SYNERGIES WITH EXISTING PORTFOLIO

1. Transaction to acquire granted Northern Territory acreage from Hancock Prospecting Pty Ltd (Hancock) was completed on 12 July 2024.
2. TEE is engaging with the NT regulator regarding variations to the current work program requirements to accommodate the Company's plans.

JUNE 2024

GRANT OF EP 258 A LANDMARK ACHIEVEMENT[1]

ENABLES COMMENCEMENT OF PRE-PLANNED EXPLORATION PROGRAM

> *"Natural gas is the way of the future and the Beetaloo Sub-basin holds some of the world's largest reserves of the highly sought after energy source. We are pleased to welcome Top End Energy to the Territory and look forward to continue working with them as they advance in the McArthur Basin."*
>
> Honorable Mark Monaghan, NT Minister for Mining, Education, Agribusiness and Fisheries

> *"Being the first EP to be granted in the NT since 2015 is a testament to the dedication of our team and the prospectivity of our acreage position. We appreciate the constructive, collaborative engagement of the NT Government and associated regulatory bodies during the process. The grant of the permit enables us to begin exploration activities on the acreage in earnest, with our planned program of activities set to commence with the previously announced AGG program."*
>
> Oliver Oxenbridge, Managing Director of Top End Energy

UNLOCKS THE PATHWAY FOR GRANT OF ADDITIONAL HIGH-PRIORITY PERMITS EP 257, EP 259 AND EP 261

1. Refer to TEE ASX announcement: *Formal Ministerial Grant of NT Exploration Permit 258* (6 June 2024)

DIVERSIFIED PORTFOLIO OF GRANTED ACREAGE

MULTIPLE NEAR-TERM, TECHNICALLY INDEPENDENT DRILLING PROSPECTS

A

FRONTIER SOUTH NICHOLSON BASIN PLAY

- Significant unconventional gas play indicated by recent regional data acquisition
- Helium and Hydrogen proven to exist across the basin

B

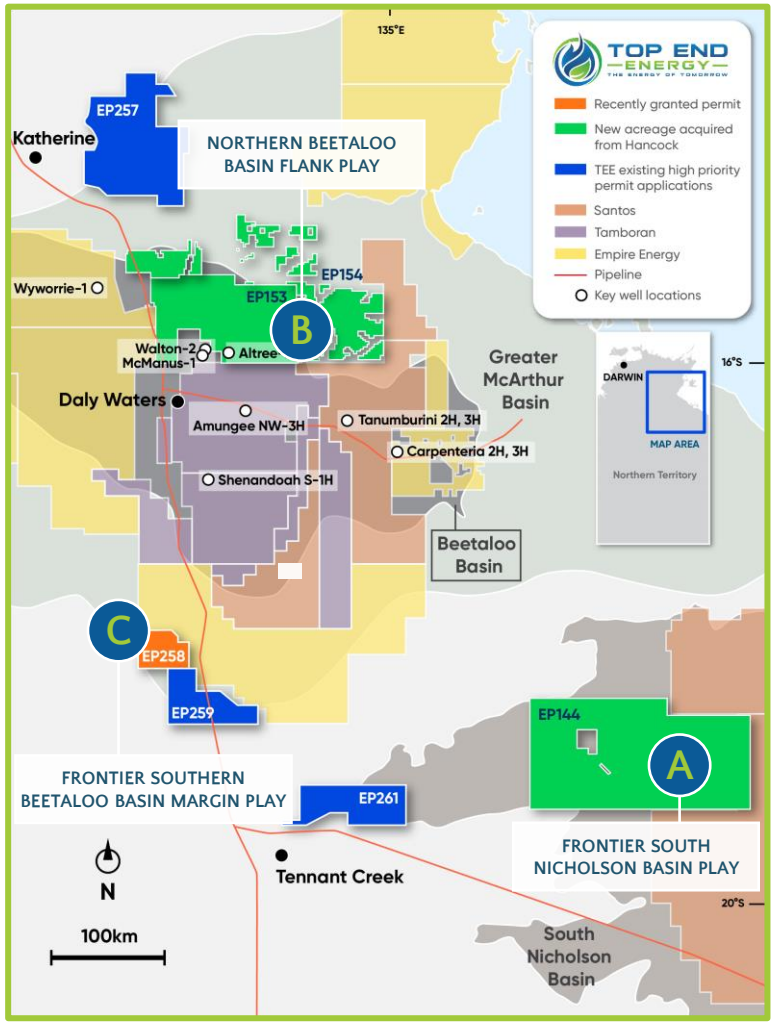
NORTHERN BEETALOO BASIN FLANK PLAY

- Walton High Helium / natural Hydrogen play
- Potential Northern extension of Beetaloo unconventional gas play

C

FRONTIER SOUTHERN BEETALOO BASIN MARGIN PLAY

- Geophysical activities planned to test both unconventional gas and natural Hydrogen / Helium prospectivity



KEY PROSPECT AREAS WITH DEMONSTRATED POTENTIAL FOR GAS, HELIUM AND HYDROGEN EXPLORATION SUCCESS

A FRONTIER SOUTH NICHOLSON BASIN PLAY

SIGNIFICANT GAS PROSPECTIVITY IN PROXIMITY TO PIPELINE INFRASTRUCTURE

Underexplored permit in proven hydrocarbon basin with potential ties to the Proterozoic shale plays of the Lawn Hill Platform and the Beetaloo Sub-basin Velkerri

- Santos is the only other player with granted acreage in the South Nicholson Basin

Proven gas flow in nearby Lawn Shale formation (Egilabria 2 well test[1]) and geochemical analysis and mud gas shows from recent NDI Carrara-1 stratigraphic well indicates promising hydrocarbon potential of newly identified Carrara Sub-basin[2]

Helium potential indicated in Egilabria well test samples (~0.9%)[1] and possum belly gas samples collected from Carrara-1 indicate traces of both Helium and Hydrogen[3]

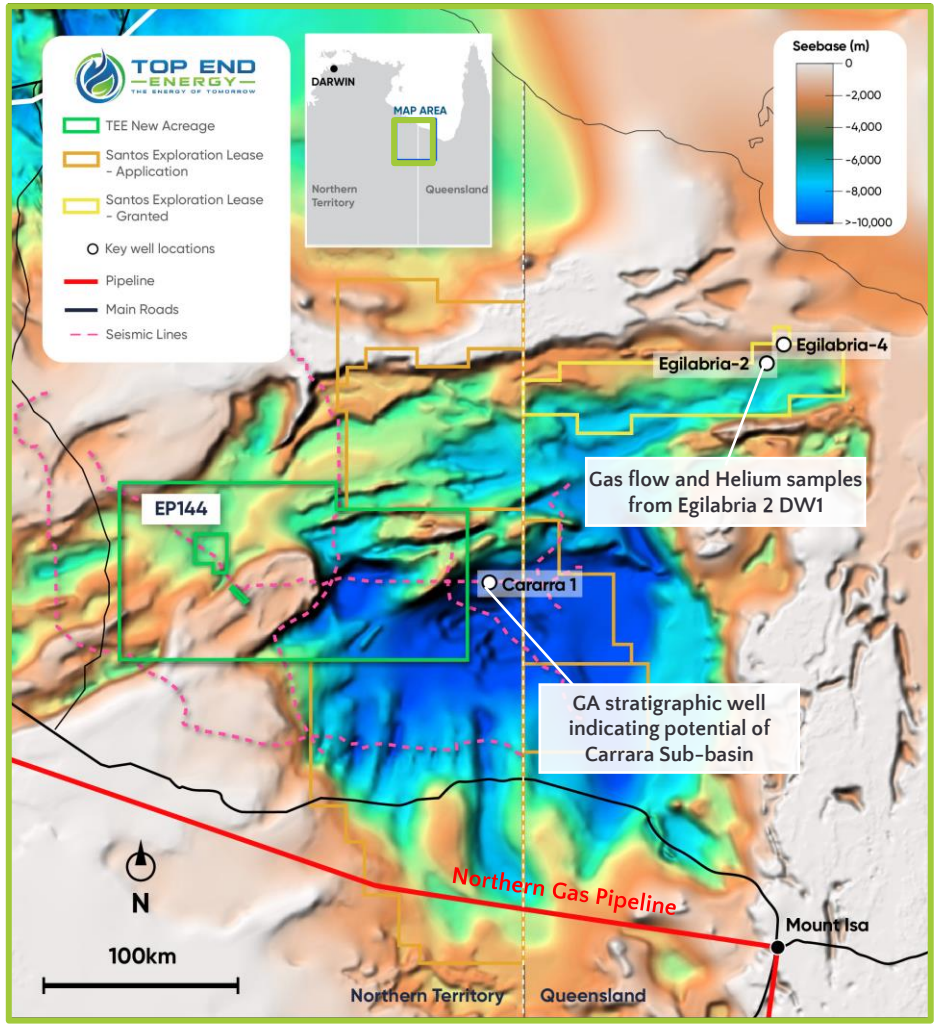
Strategically positioned in proximity to the Northern Gas Pipeline, providing access to Mount Isa and the East Coast gas market

- Significant mining activity in the area (South32, Endeavour Resources, Teck Resources), presenting potential for additional data sources and future offtake counterparties
- Focal region for the Queensland Critical Minerals Strategy

Granted acreage with Native Title agreements and existing work program approvals in place allowing immediate undertaking of on ground activities

Active work program targeting key near-term value catalysts on EP 144:

1. Confirmation of source rock presence on the permit
2. Sampling elevated levels of Hydrogen and Helium



1. Gas Analysis Additional Report – Egilabria 2 DW1 for Armour Energy; Weatherford Laboratories (Australia) Pty Ltd; January 2013
2. A. Bailey, E. Grosjean, L. Wang, C. Boreham, G. Butcher, C. Carson, A Jarrett, L. Carr, C. Southby, T. Palu and P. Henson; 2022. *Resource potential of the Carrara Sub-basin from the deep stratigraphic well NDI Carrara 1.* CSIRO
3. Boreham, C. J., Wang, L., Sohn, J., Jinadasa, N, Hong, Z., Chen, J., Grosjean, E. and Jarrett, A; 2022. *Exploring for the Future - NDI Carrara 1 gas geochemistry: molecular composition, carbon and hydrogen isotopes of hydrocarbon gases and the sources of molecular hydrogen and helium.* Record 2022/14. Geoscience Australia, Canberra.

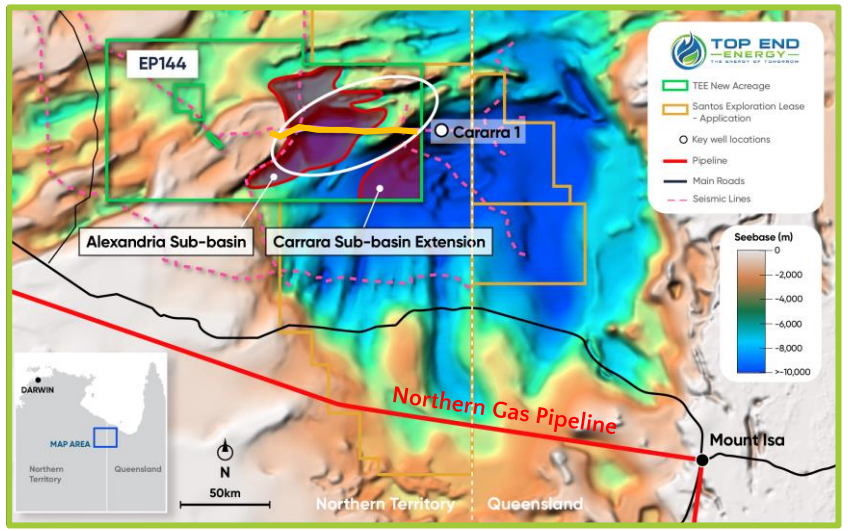
A FRONTIER SOUTH NICHOLSON BASIN PLAY

LARGE GAS PLAY FAIRWAY IDENTIFIED WITH MULTIPLE SOURCE ROCK POTENTIAL

- Undrilled sub-basin of South Nicholson with both conventional and unconventional gas potential in proximity to the Northern Gas Pipeline:
  - "Alexandria Sub-basin": **~2,300km² (~580,000 acres)** of identified play fairway
  - "Carrara Sub-basin Extension": **~1,200km² (~300,000 acres)** of identified play fairway
- Geoscience Australia ("GA") *Exploring for the Future* program identified both source rocks and an undrilled sub-basin (Carrara Sub-basin)
  - NDI Carrara-1 well (3.5km West of EP 144) identified multiple active petroleum systems
    - Gas mature source rocks within the Proterozoic Wide and Lawn super sequences with TOC samples up to 5.5 wt%
    - Gas shows correspond with kerogen rich interval
    - Shallow oil stains and bleeding observed on core
  - 2D Seismic identifies undrilled sub basin with syn-rift sediments correlated to key source rock intervals – Wide, Lawn and River super sequences
  - Inversion structures are potential drilling targets
- Evaluation ongoing: Carrara sub-basin extension into southeast area of EP 144

EP 144 seismic horizons correlate to Carrara-1 well → NDI Carrara-1

Potential Lawn and River sequence source rock ("SR") interpreted presence in EP 144 (seismic line 17GA – SN1, Modified *Gibson and Edwards, 2020 and Carr et al, 2020*)



Seismic line (17GA – SN1) highlighting Alexandria Sub-basin

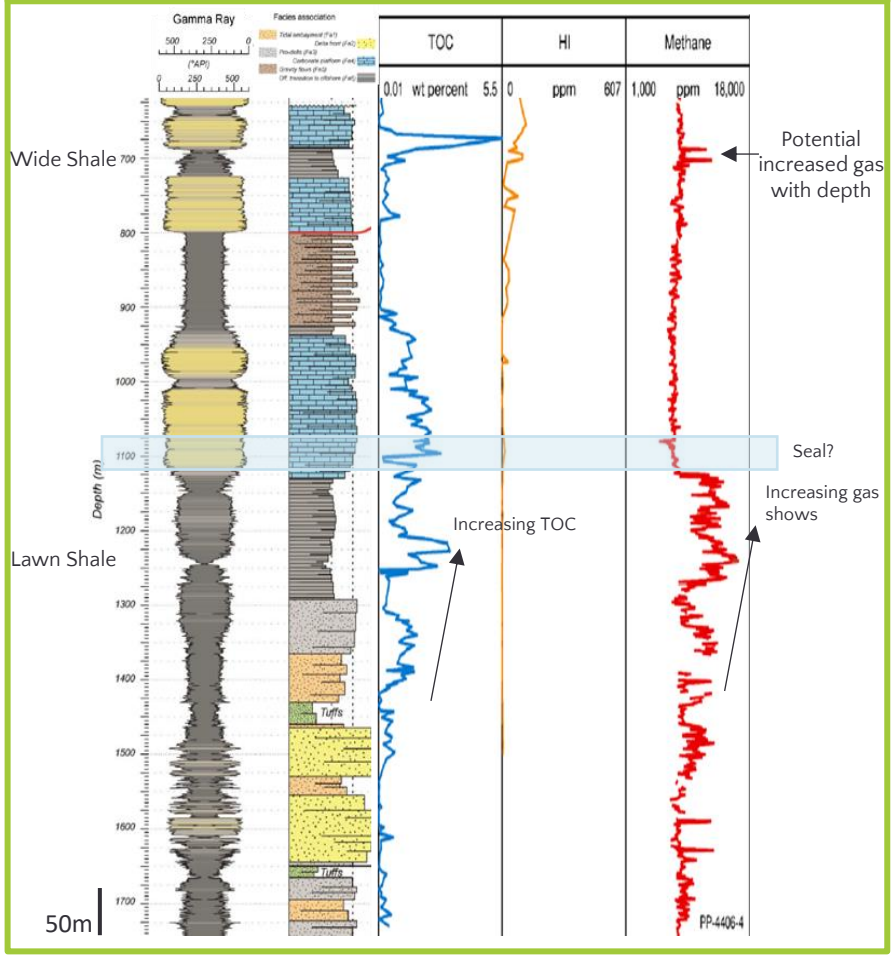
A FRONTIER SOUTH NICHOLSON BASIN PLAY

ALEXANDRIA SUB-BASIN PROTEROZOIC UNCONVENTIONAL PLAY

Alexandria sub-basin unconventional play indicated by presence of key play elements identified in recent NDI Carrara-1 stratigraphic well (TD 1,751m):

- ✓ High TOC Proterozoic source rocks intersected in NDI Carrara-1 well [1]
  - Wide shale - 5.5 wt% TOC, mean HI 76 mg HC/gTOC (Lawn Hill Fm, 1595 Ma) [2]
  - Lawn shale – 3.2 wt% TOC, mean HI 3 mg HC/gTOC (Lawn Hill Fm, 1601 Ma) [2]
  - Riversleigh Fm shale (~1630 Ma) - not intersected in Carrara-1 due to well depth (Interpreted to be deposited in Alexandria sub-basin)
- ✓ Multi-stacked gas mature source rocks confirmed in Carrara-1 well: 1.3% – 2.4% VREq [2]
- ✓ Similar depositional setting as Velkerri Fm, Beetaloo Sub-basin (Mesoproterozoic, 1417 Ma)
  - Similar mineralogy and expected similar mechanical behaviour
- ✓ Target interval porosity 3 – 7 %
  - Scanning Electron Microscope images confirm kerogen porosity development [3]
- ✓ Top seal presence – gas shows directly below tight carbonate
- ✓ Multiple petroleum systems confirmed
  - Gas shows correlate to Proterozoic kerogen rich intervals [2]
  - Oil bleeding/stains observed on core at 528m (Paleozoic) and 765m (Proterozoic) [2]
- ✓ Proximity to Northern Gas Pipeline (Mt Isa and East coast gas market)

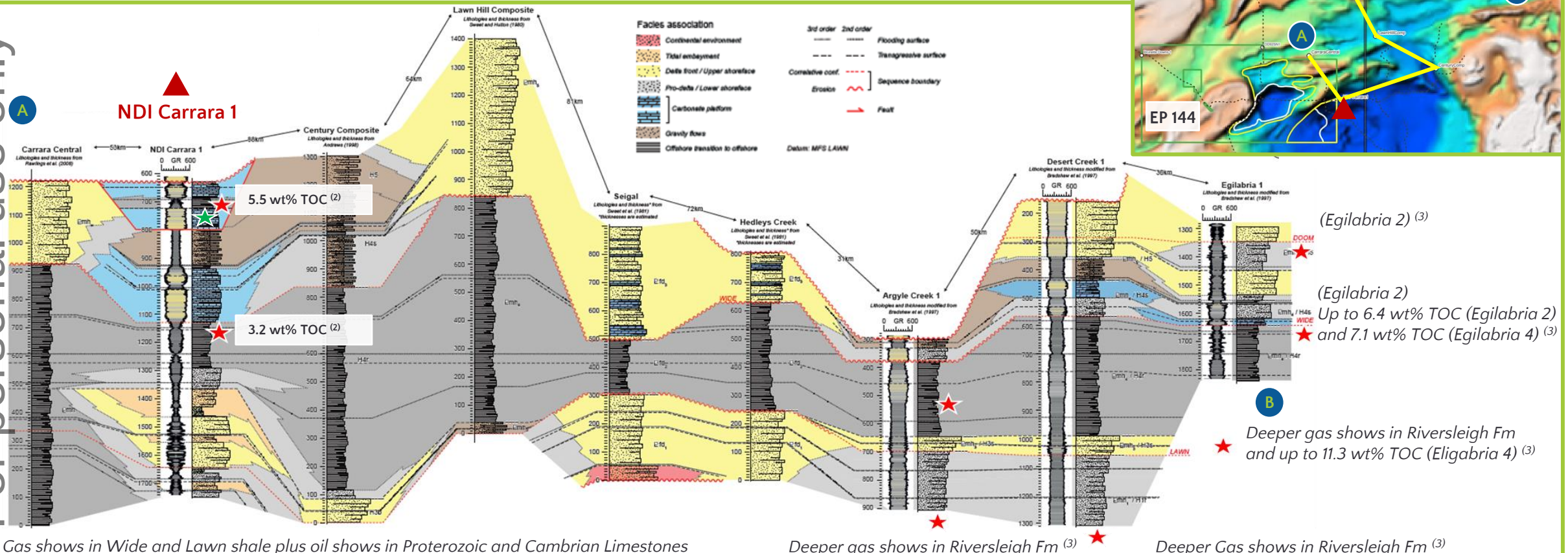
NDI Carrara-1 [2][3]



1. Geoscience Australia Leco TOC data (Exploring for the Future).
2. Grosjean, E., Boreham, C., Jarrett, A., Butcher, G. 2022. *The energy resource potential of the Carrara Sub-basin revealed by new stratigraphic drilling.*
3. Crombez, V., Delle Piane, C., Dewhurst, D. N. 2022. *NDI Carrara 1 sedimentology, microstructural analyses, and sequence stratigraphy (Appendix 3)*. CSIRO.

A FRONTIER SOUTH NICHOLSON BASIN PLAY

PROVEN SOURCE ROCKS DEPOSITED >200KM



- GA cross-section highlights proven source rocks from Egilabria gas discovery connecting to Carrara Sub-basin
  - High TOC source rocks with gas shows span >200km
- **TEE interpretation of seismic line acquired by Geoscience Australia observes same source rocks deposited in Alexandria Sub-basin**

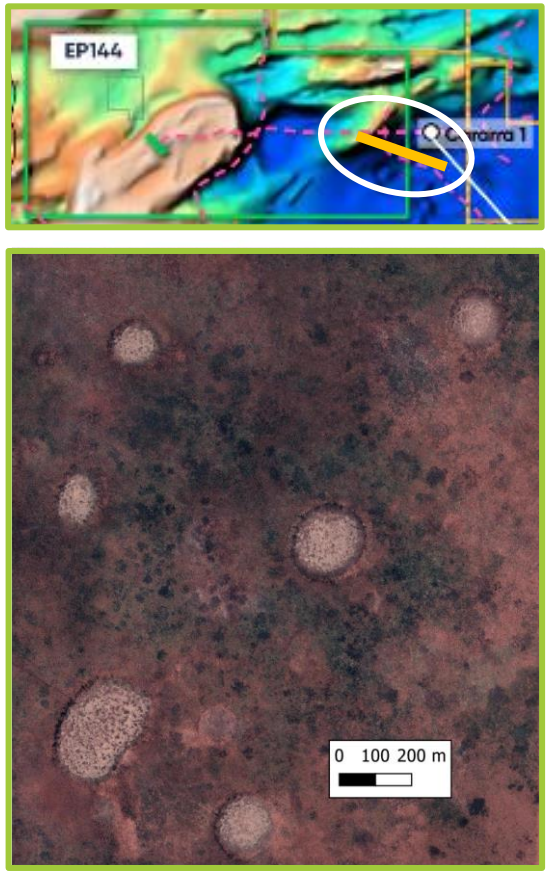
★ Gas shows
★ Oil shows

1. Cross-section: Crombez, V., Delle Piane, C., Dewhurst, D. N. 2022. *NDI Carrara 1 sedimentology, microstructural analyses, and sequence stratigraphy (Appendix 3).* CSIRO.
2. Geoscience Australia Leco TOC data (*Exploring for the Future*).
3. Well completion reports for Egilabria 2, Egilabria 4, Desert Creek 1 and Argyle Creek 1.

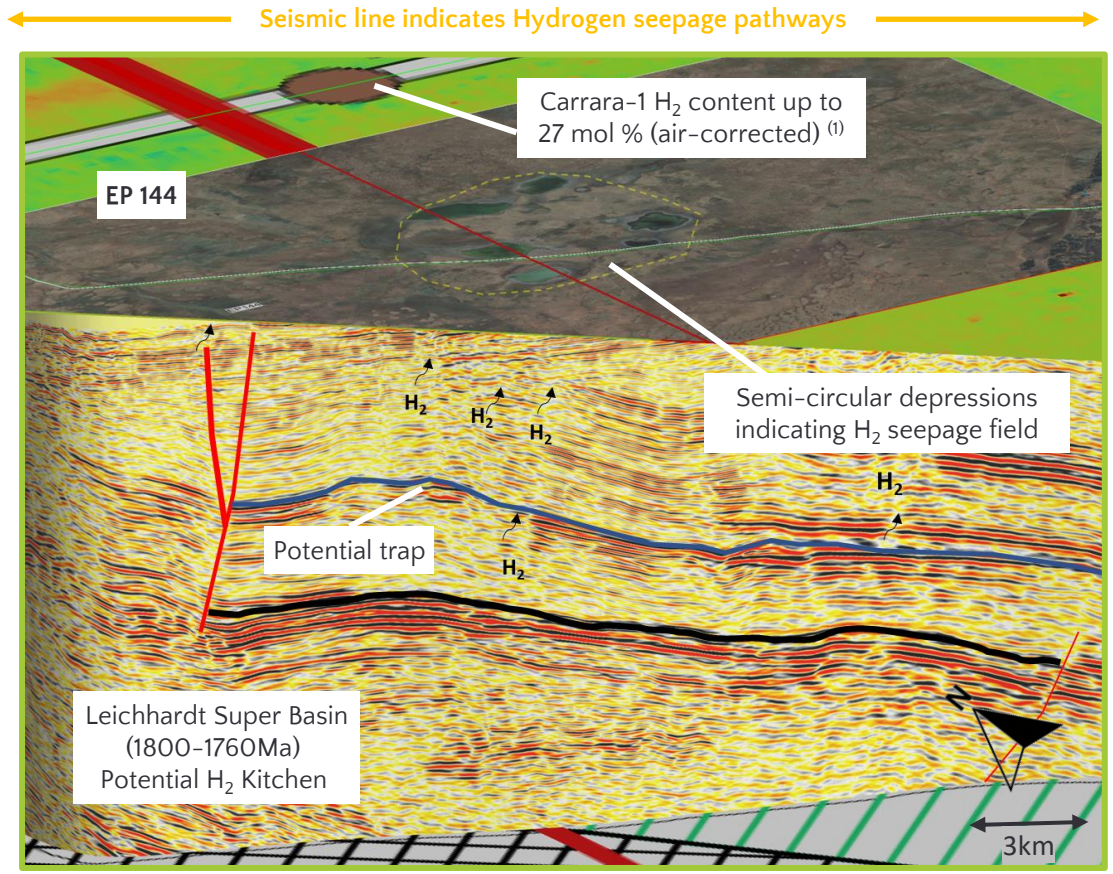
A FRONTIER SOUTH NICHOLSON BASIN PLAY

HELIUM AND HYDROGEN POTENTIAL ALSO INDICATED ACROSS THE BASIN

- Hydrogen of up to 27 mol% (air-corrected) sampled in Carrara-1 stratigraphic well (1)
- Potential Hydrogen gas seepage pathways and trap identified in seismic data
  - Surface depressions in the area linked to Hydrogen seepage indicated in seismic
- Multiple potential sources of Hydrogen:
  - Overmature sequence of the Carrara sub-basin
  - Iron-rich metasedimentary rocks and mafic amphibolites of the Leichhardt Super Basin (1800 – 1760Ma)
- Multiple "Fairy Circles" (surface depressions) across EP 144 seen in other regions of well-documented Hydrogen generation
- Both molecular Hydrogen and Helium detected in Carrara-1 is likely to have a major radiogenic origin (1) – isotopic analysis of Carrara-1 samples ongoing
- Helium previously sampled in the basin (~0.9% Helium concentration in sampled gas from well test of Egilabria 2 well (2))



Surface depressions over indicated seepage pathways



Indicative natural Hydrogen system potential

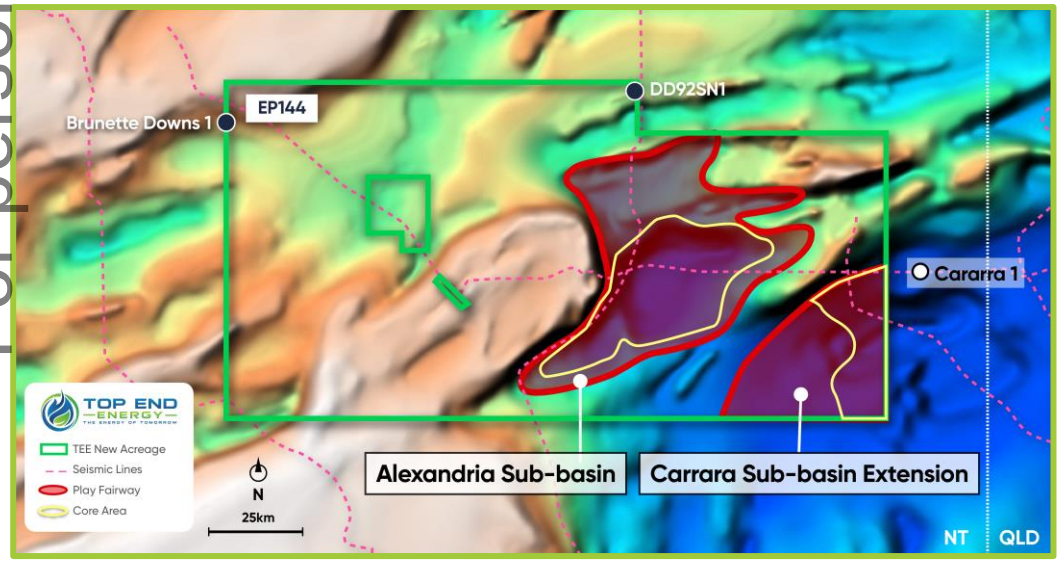
1. Boreham, C. J., Wang, L., Sohn, J., Jinadasa, N, Hong, Z., Chen, J., Grosjean, E. and Jarrett, A; 2022. *Exploring for the Future – NDI Carrara 1 gas geochemistry: molecular composition, carbon and hydrogen isotopes of hydrocarbon gases and the sources of molecular hydrogen and helium.* Record 2022/14. Geoscience Australia, Canberra.
2. Gas Analysis Additional Report – Egilabria 2 DW1 for Armour Energy; Weatherford Laboratories (Australia) Pty Ltd; January 2013

A FRONTIER SOUTH NICHOLSON BASIN PLAY

POTENTIAL SIZE OF THE PRIZE AND NEXT STEPS

IDENTIFIED GAS PLAY FAIRWAY

- Alexandria Sub-basin:
  - ~580,000 acres (~2,300km²) potential play fairway
  - ~270,000 acres (~1,100km²) of core area
- Carrara Sub-basin extension:
  - ~300,000 acres (~1,200km²) potential play fairway
  - ~125,000 acres (~600km²) of core area



WORK PROGRAM

- **Analysis of existing regional drilling, seismic and geophysical data**
  - Refine geological model
  - Provide better control on stratigraphy thickness and depth of burial
  - Further quantify extent of prospective play fairway
  - Identify potential trapping geometries
- **Geophysical reprocessing and/or additional acquisition**
  - Improve data resolution to help identify subtle trapping geometries
  - Refine drilling locations
- **Soil gas sampling to test for elevated Helium / Hydrogen**
  - Definitively test the presence of Helium and H2 play fairways
  - Identify potential migration pathways and play "sweet spots"
- **Drilling of a stratigraphic well**
  - Confirm source rock presence and maturity
  - Opportunity to further confirm of presence of Helium / H2

B NORTHERN BEETALOO BASIN FLANK PLAY

MULTIPLE PLAY POTENTIAL ON NORTHERN FLANK OF BEETALOO SUB-BASIN

1 NATURAL HYDROGEN AND HELIUM PROSPECTIVITY

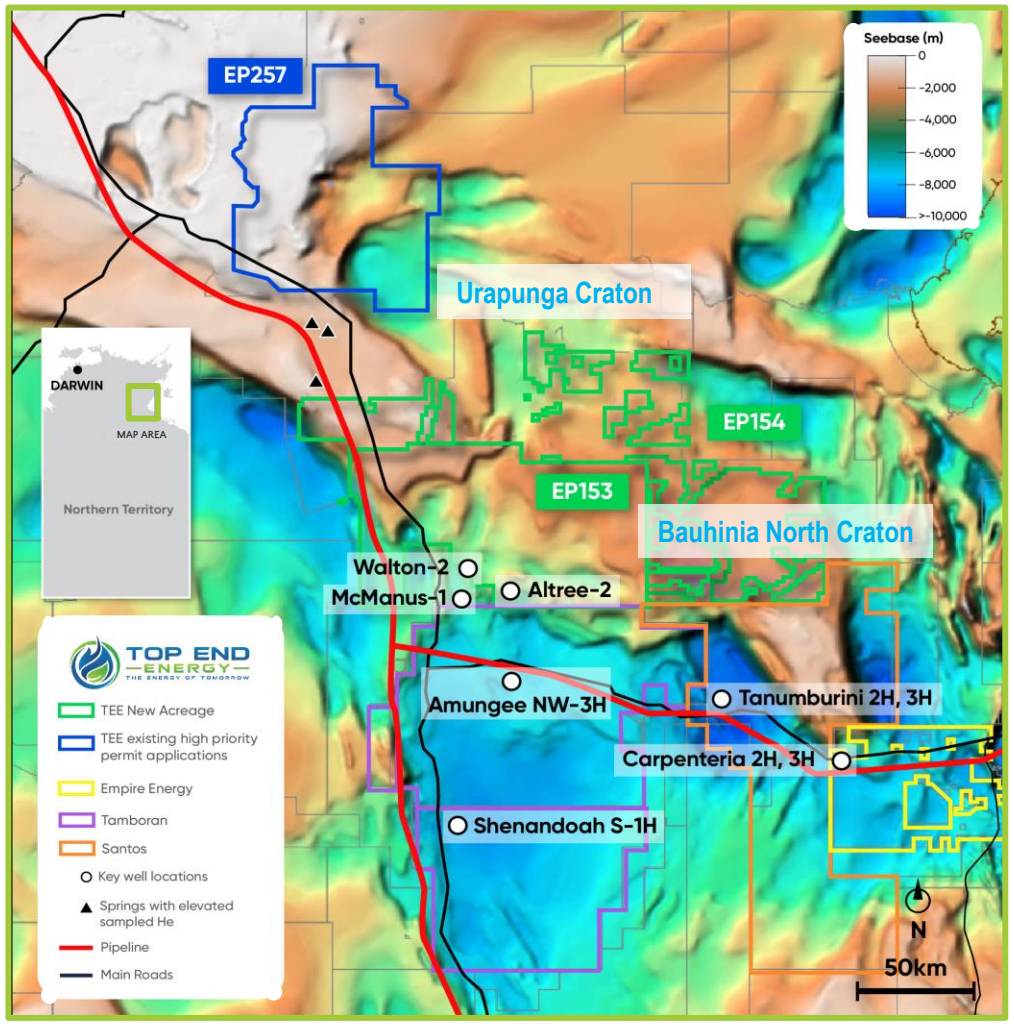
- Urapanga and Bauhinia North Cratons extend over majority of EP 153 and 154
  - Basement terrain conducive to the generation of Hydrogen and Helium
  - Hot springs adjacent to EPs with elevated sampled Helium[1]

2 NATURAL GAS POTENTIAL

- Underexplored northern extension of Beetaloo Sub-basin unconventional gas play
- Velkerri and Kyalla Shales present in historical Altree-2 and Walton-2 wells – wells drilled on structural highs targeting conventional reservoirs. TEE target is deeper shale potential off structure (possibly analogous to Carpentaria wells)
- Located near existing Amadeus Gas Pipeline which provides access to Darwin and the East Coast gas market

2024 work program activities focused on maturing the potential of both the unconventional natural gas play and Hydrogen / Helium prospectivity

- Airborne Gravity Gradiometry to better resolve sub-surface structures
- Low impact sampling programs to identify localised H2 / He sources

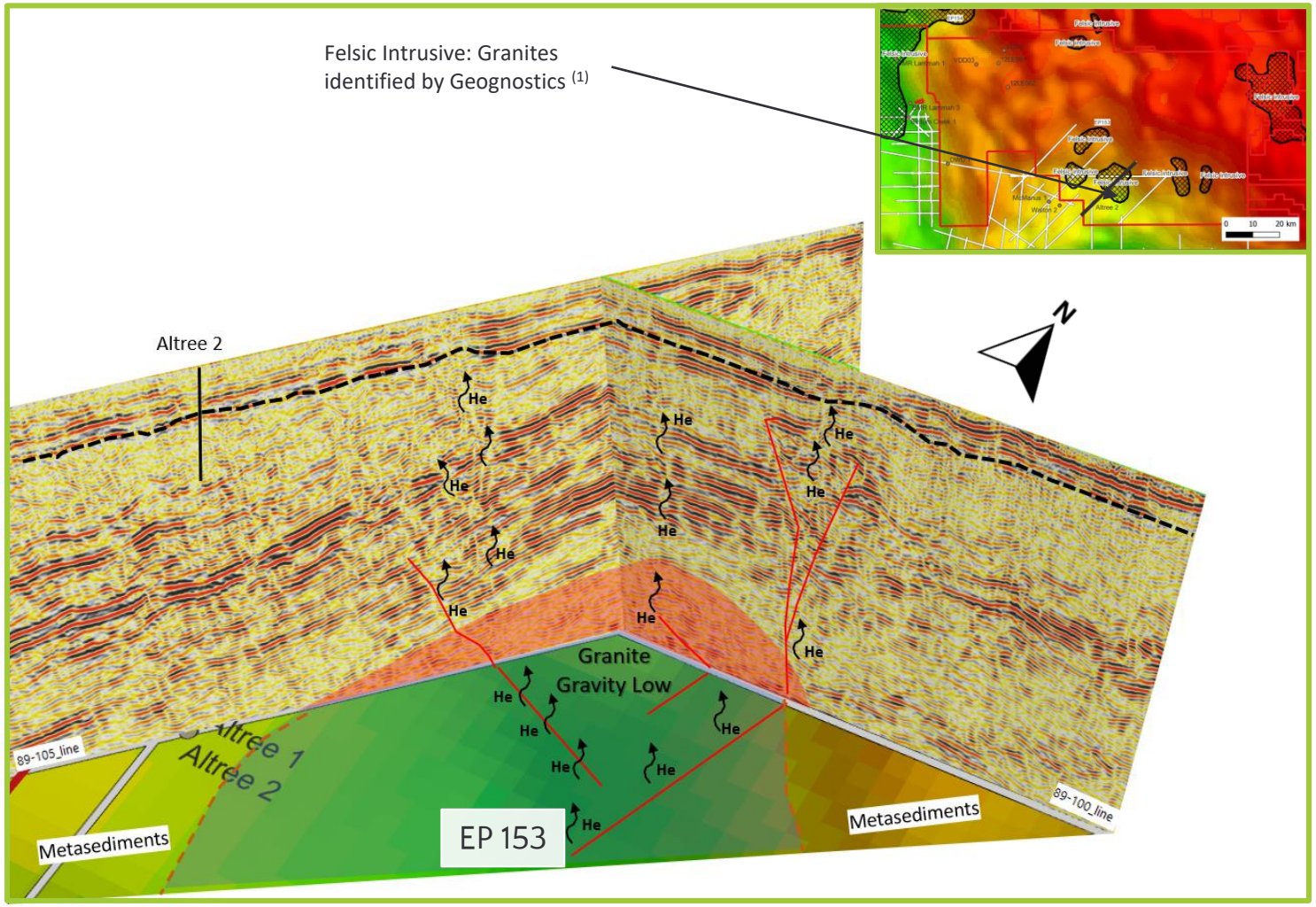


1. Lamontagne, S., Suckow, A., Gerber, C., Deslandes, A.,Wilske, C.,and Tickell, S.(2021) *Groundwater sources for the Mataranka Springs (Northern Territory, Australia)*. Nature Scientific Reports | (2021) 11:24288 | https://doi.org/10.1038/s41598-021-03701-1

B NORTHERN BEETALOO BASIN FLANK PLAY

EP 153 EMERGING SHALLOW HELIUM PLAY

- Gravity Low indicates the presence of a shallow granite body
  - Granites typically contain higher concentrations of uranium and thorium compared to other rock types. As these elements undergo radioactive decay, they produce alpha particles, which eventually capture electrons to form Helium atoms
  - Granite bodies behave as closed systems – once Helium is generated it tends to accumulate rather than escape
- Evidence of faulting cutting through the Granites in seismic data providing drainage pathways for Helium accumulated in the granite body
- Evidence of Fluid Migration associated with major faulting in the seismic data
- Preparations for aerial surveys and soil gas sampling to confirm the presence of Helium underway

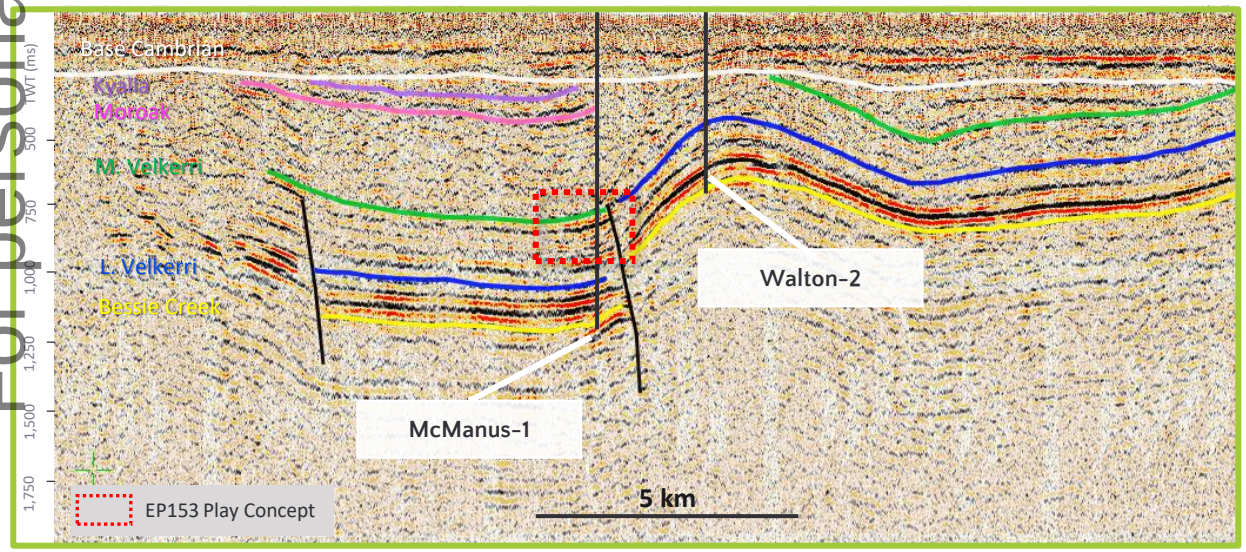


1. Northern Territory Geological Survey and Geognostics Australia Pty Ltd, 2021. Northern Territory SEEBASE® and GIS. Northern Territory Geological Survey, Digital Information Package DIP 030.

B NORTHERN BEETALOO BASIN FLANK PLAY

UNDEREXPLORED NATURAL GAS AND TIGHT-OIL POTENTIAL

- Underexplored extension of Beetaloo unconventional oil-wet gas play immediately North of the sub-basin within the Southern portion of EP 153
- Play concept: off-structure Velkerri shale oil / wet gas potential: McManus-1 type well (4km from EP 153) observed gas and oil shows throughout Velkerri Fm with +100m target pay zone identified
- Geochemistry report indicates oil - wet gas maturity with TOC range 3.4 – 6.2 wt% off-structure [1]
- Located near existing Amadeus Gas Pipeline, providing access to Darwin and the East Coast gas market

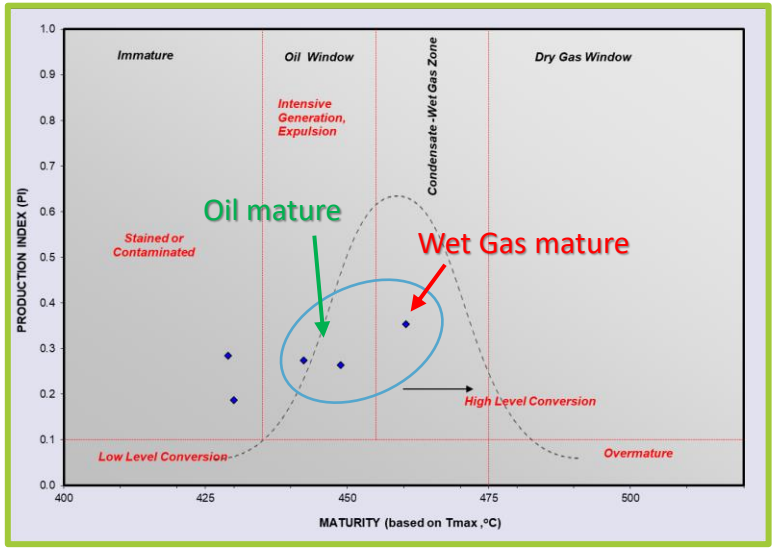


McManus-1 type well, highlights the off-structure unconventional oil-wet gas play concept located in EP 153 (McArthur Basin seismic survey line 90-109. NTGS, Pacific Oil, 1990)

Type well McManus-1, represents the flank play interpreted to be present in southern EP153

McManus-1 Geochemistry report highlights wet gas potential

Oil and gas shows across Velkerri Fm



McManus-1 Middle Velkerri kerogen conversion-maturity plot (NTGS SRA report, 2020)

1. McManus-1 NTGS Weatherford SRA report, 2020.

B NORTHERN BEETALOO BASIN FLANK PLAY

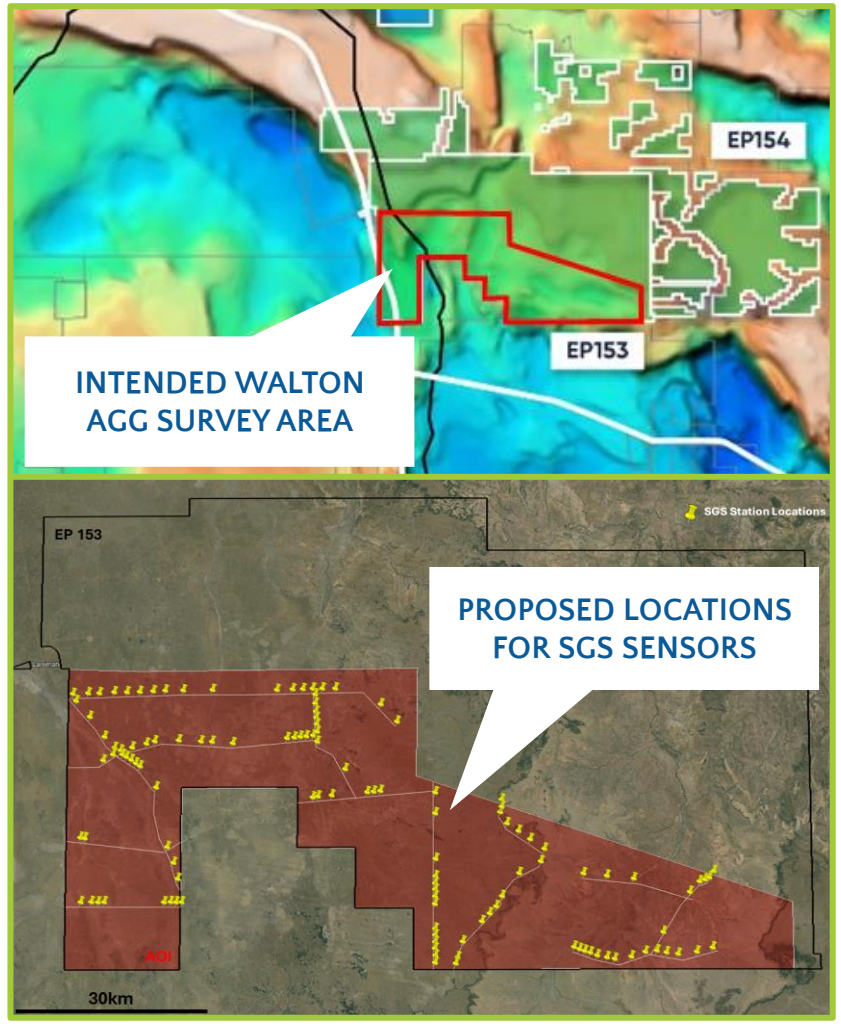
H2 2024 GEOPHYSICAL WORK PROGRAM TO MATURE PROSPECTIVITY

AIRBORNE GRAVITY GRADIOMETRY (AGG) SURVEY

- AGG survey to be acquired to create a new gravity model for key focus area over EP 153 and advance understanding of basin architecture and structural lineaments on the northern flank of the Beetaloo Sub-basin.
- **Awarded A$100k co-funding grant in Round 17 of the Geophysics and Drilling Collaborations program (Regional Scale Geophysics), administered by the NT Geological Survey**

SOIL GAS SAMPLING

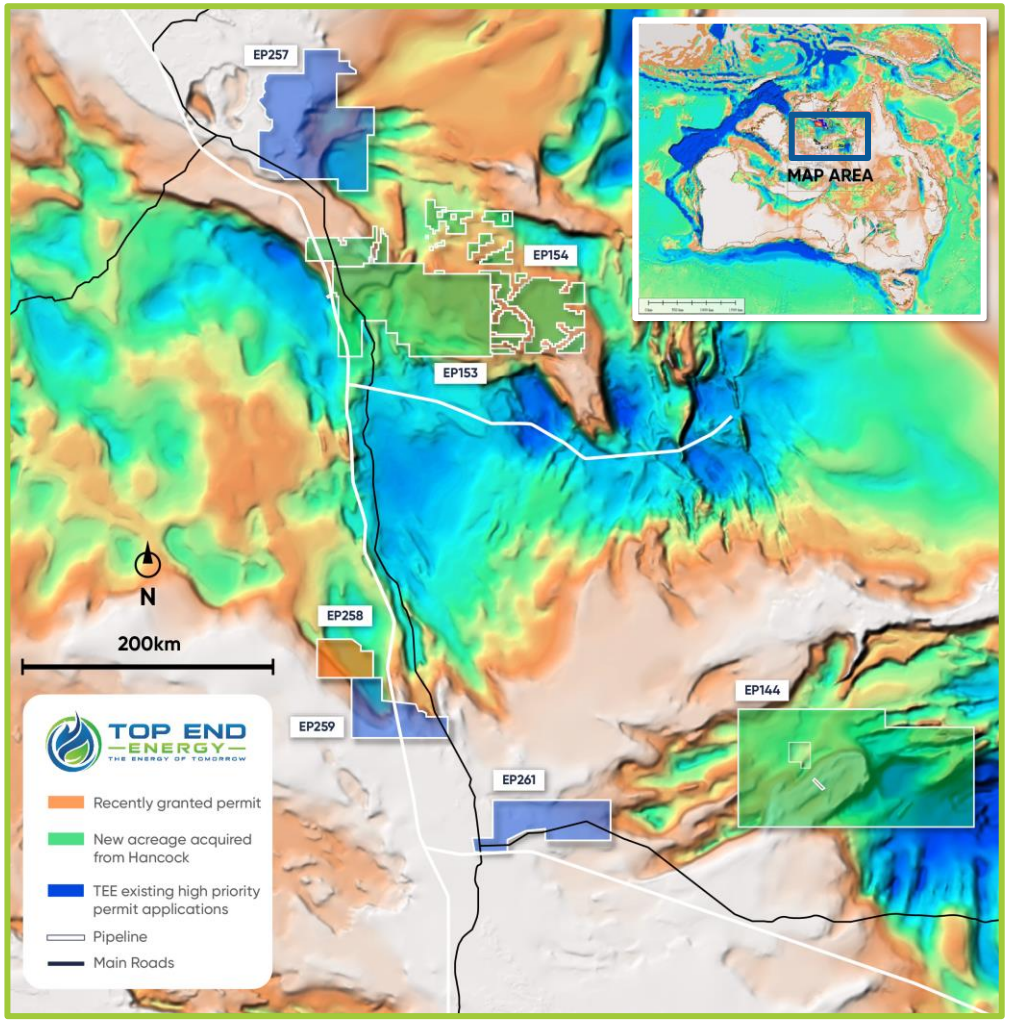
- Deployment of commercial-grade spot sensors to detect and monitor levels of Helium and Hydrogen gas seepage from subsurface geological environments
- Program primarily intended to test the presence of localised radiogenic generation systems for Hydrogen and Helium and provide insights into whether these gases are migrating to surface along key structural trends and lineaments
- **Awarded A$100k co-funding grant in Round 17 of the Geophysics and Drilling Collaborations program (Innovative Targeting)**



C FRONTIER SOUTHERN BEETALOO BASIN MARGIN PLAY

MULTIPLE PLAY POTENTIAL ON RECENTLY GRANTED ACREAGE (EP 258)

- Potential wet gas window on shallower basin margin around the Beetaloo Sub-basin
- Pursuing confirmation of the extension of Velkerri shale formation, primary target for the Beetaloo Sub-basin
- Additional potential for presence of conventional Bessie Creek sandstone formation
- Preliminary studies suggest acreage is also prospective for natural Hydrogen and Helium
- Proximal to existing gas pipeline infrastructure with access to east coast market and LNG export terminals
- Opportunity to leverage peer operator activity and learnings to optimise exploration strategy and minimise costs
- Continuing to build relationships with key local stakeholders since entering the region



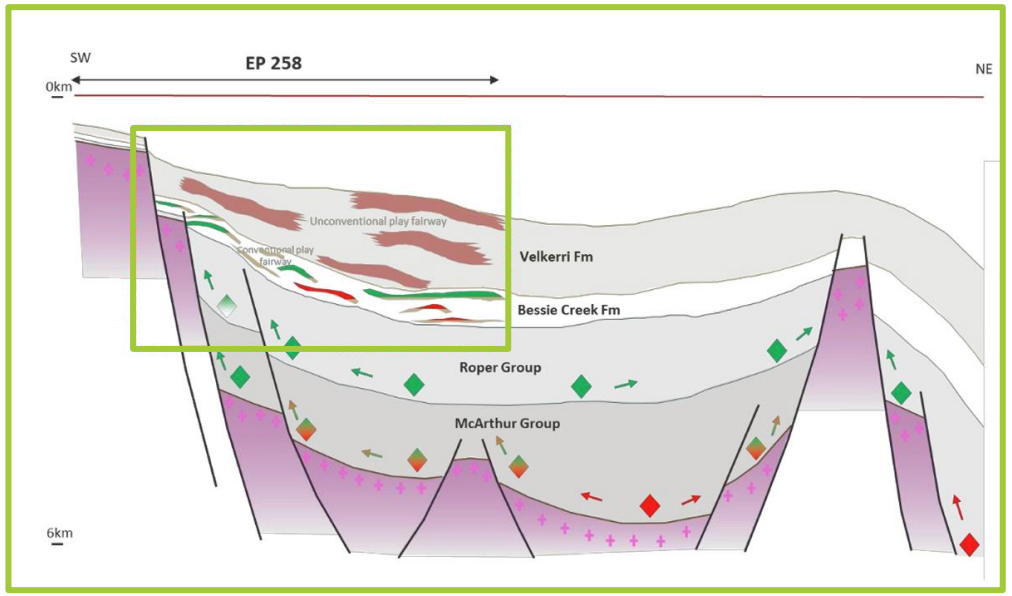
C FRONTIER SOUTHERN BEETALOO BASIN MARGIN PLAY

LOW-COST WORK PROGRAM TO MATURE MULTIPLE PLAY POTENTIAL

Completion of an airborne gravity gradiometry survey commissioned to aid structural interpretation and **optimise acquisition parameters and location of seismic survey,** to commence H2 2024

Planned **2D seismic survey acquisition and data processing currently** scheduled to commence H1 2025

Completion of airborne gravity and seismic survey data processing to enable **drill prospect determination and ranking in preparation for any future drilling event**



Regional schematic highlighting the potential of the untested southern margin of the greater McArthur Basin and EP 258

NEAR-TERM WORK PROGRAM TO BE FUNDED FROM CURRENT CASH RESERVES

STRONG BIPARTISAN SUPPORT FOR NATURAL GAS

CRITICAL TO THE NATIONAL ENERGY MIX AND AUSTRALIAN ECONOMY

Federal Government Policy Support

Labor

Focus on transitioning to renewable energy while also supporting natural gas projects

LIBERAL NATIONALS

Emphasis on natural gas for energy security and economic stability, expanded natural gas exploration and production

Local NT Government Policy Support

Country Liberal Party
THE TERRITORY PARTY

Promotes natural gas as a key driver to transform the NT into a competitive, industrially advanced region.

Territory Labor

Supports responsible natural gas development with a focus on balancing economic growth with environmental sustainability.

"Gas is the mechanism, the industry to underpin a strong transition to renewables..."

The Honourable Lia Finocchiaro,
Chief Minister of the Northern Territory

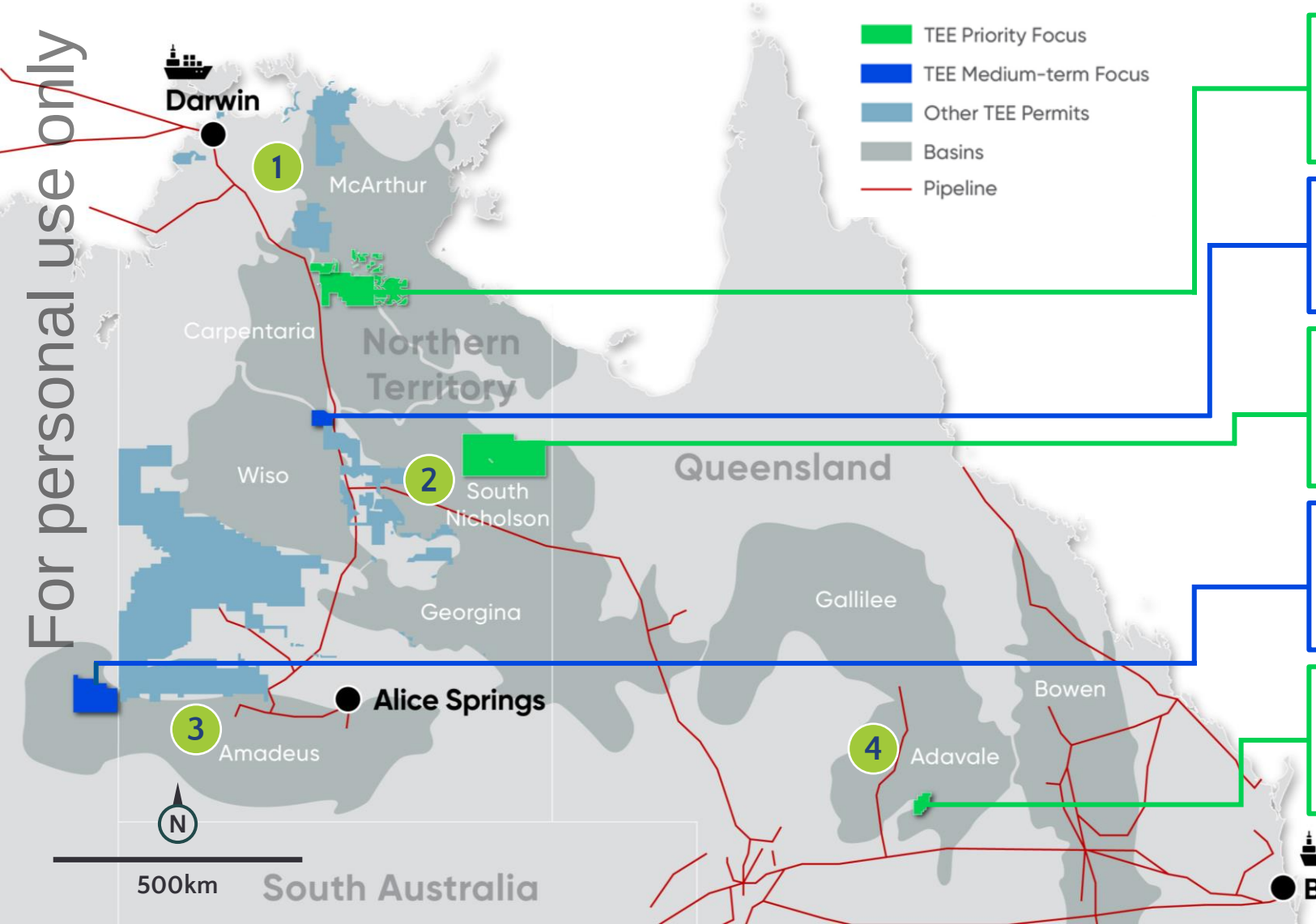
NEW CHIEF MINISTER OF THE N.T. "IS UNASHAMEDLY PRO-GAS", VIEWING IT AS A CRUCIAL ENERGY SOURCE THAT IS 50% CLEANER THAN COAL. COMMITTING TO REDUCING PROJECT APPROVAL TIMES AND CREATING A FAVOURABLE ENVIRONMENT FOR BUSINESS GROWTH

CONSENSUS PROVIDES A STABLE AND SUPPORTIVE ENVIRONMENT FOR NEW GAS PROJECTS IN THE NT, ENSURING LONG-TERM ECONOMIC BENEFITS AND ENERGY SECURITY

APPENDIX

PORTFOLIO SNAPSHOT

CONCENTRATING CAPITAL TO MAXIMISE VALUE CREATION POTENTIAL



1 McArthur Priority Focus EP 153 / EP 154 (NT)

- AGG acquisition contractor engagement and program planning underway
- Soil gas sampling and 2D seismic to follow

1 McArthur Medium-term Focus EP 258 (NT)

- Formal Ministerial grant achieved
- Enables deployment of pre-planned exploration

2 South Nicholson Priority Focus EP 144 (NT)

- Assessing existing data and determining work program to best mature identified material natural gas, Helium and natural Hydrogen potential

3 Amadeus Medium-term Focus EP 501 (WA)

- Work activities on hold pending negotiation of Heritage Protection Agreements (**HPA**) with Traditional Owner groups

4 Adavale Priority Focus ATP 1069 (Queensland)

- Assessing strategic options
- Submission of PCA to be considered ahead of any further work

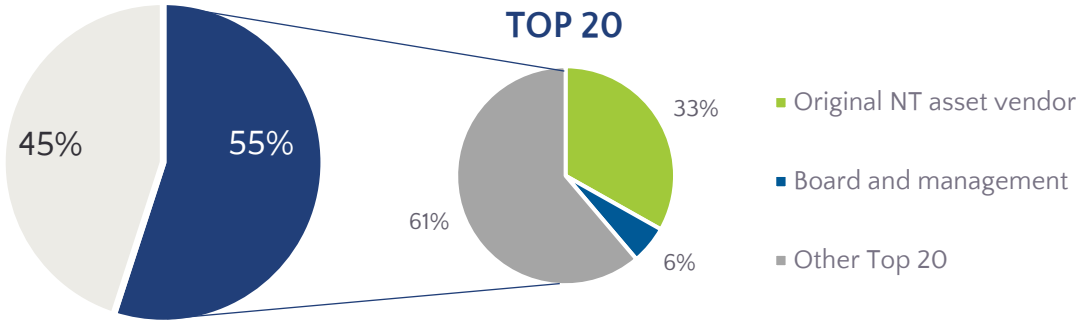
WELL FUNDED FOR NEAR-TERM ACTIVITIES

WITH ATTRACTIVE UPSIDE POTENTIAL TO CURRENT VALUATION

Capital structure

Share price[1]	A$0.10/share
Shares on issue[1]	87.03M
Market capitalisation (undiluted)[1]	A$8.7M
Cash[2]	A$2.7M
Implied enterprise value[1],[2]	**A$6.0M**
Options on issue[1]	27.3M
Performance rights[1]	3.0M
Total shares (fully diluted)	117.3M

Register detail[1]



Key technical service providers

INGAUGE Well Engineering & Project Management

Discover GEOSCIENCE

Xcalibur MULTIPHYSICS

TERREX SEISMIC

1. As at 29 August 2024
2. As at 30 June 2024

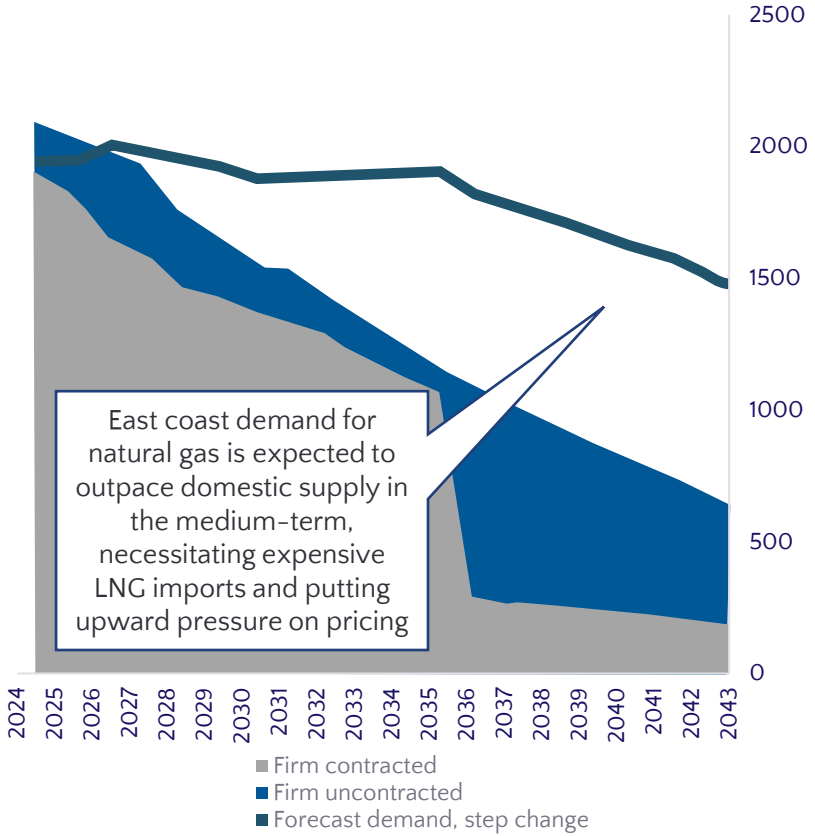
NATURAL GAS IS CRITICAL FOR A CLEAN ENERGY TRANSITION

LONG-TERM GLOBAL LIQUID NATURAL GAS (LNG) MARKET DEFECIT FORECAST

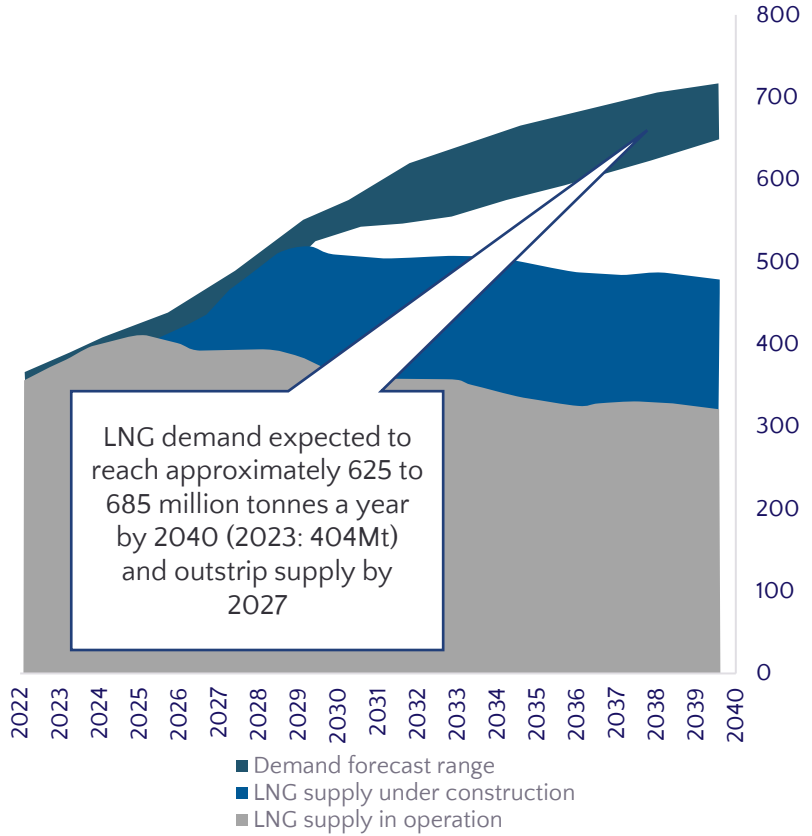
NATURAL GAS

While the global LNG market is increasingly calling on Australia to help ease international supply pressures, the domestic market is structurally short of gas

AUSTRALIAN EAST COAST OUTLOOK (PJ/annum)[1]



GLOBAL LNG SUPPLY VS DEMAND FORECAST (MTPA)[2]



1. Adapted from AEMO: Gas Statement of Opportunities – For Eastern and South-eastern Australia (March 2024)
2. Shell LNG Outlook 2023 and 2024. Adapted from Shell's interpretation of Wood Mackenzie, Polen &Partners, IEA, S&P Global Commodity Insights and FGE 2022 & 2023 data.

HIGH VALUE HELIUM GAS

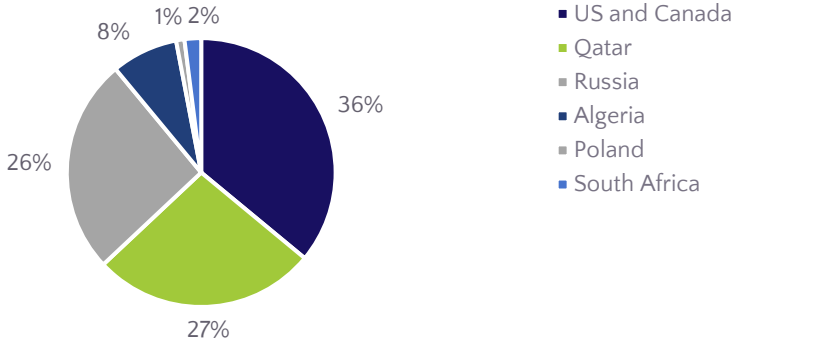
ESSENTIAL FOR CURRENT AND FUTURE TECHNOLOGIES

He

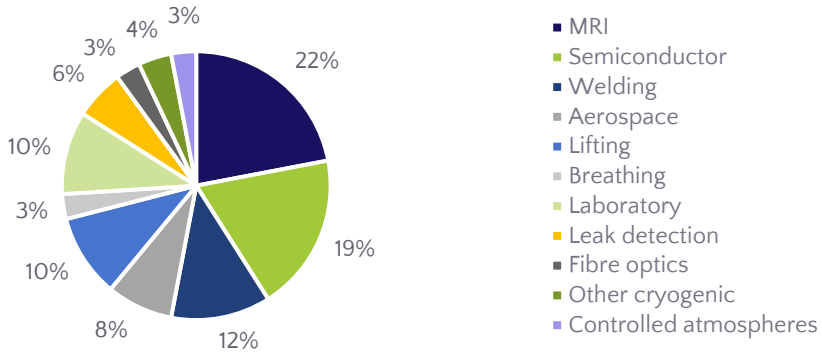
HELIUM GAS

A vital resource across the technology, science, medicine, and manufacturing industries **with no substitutes** when used for low temperature cryogenic applications

FORECAST SUPPLY BY COUNTRY 2025 (%)



DEMAND BY APPLICATION (%)



Estimated US$5 billion market

enabling US$ trillions in economic activity

Supply concentrated to roughly 20 natural gas sources

Historically selling for >50 times the price of LNG

Source: Kornbluth Helium Market Report, https://www.gasworld.com/story/exclusive-lessons-to-learn-from-qatari-helium-situation-says-kornbluth/2084056.article/?red=1

NATURAL HYDROGEN FOR A CLEAN ENERGY FUTURE

MAJOR EMERGING FUEL SOURCE TO SUPPORT THE ENERGY TRANSITION

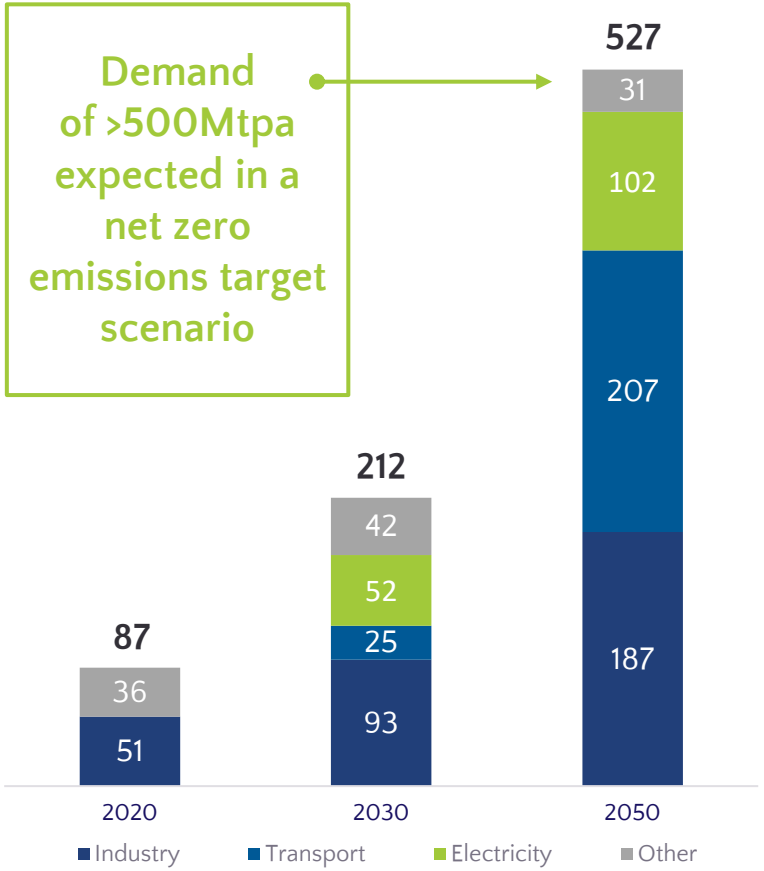
H

NATURAL HYDROGEN

- Contains zero carbon, is non-toxic and non-poisonous
- Storable in large quantities for long periods
- No atmospheric or water pollution when released

GLOBAL HYDROGEN DEMAND BY SECTOR (Mt)[1]

Demand of >500Mtpa expected in a net zero emissions target scenario



Investments in Hydrogen could reach **US$280 billion by 2030** with the potential to create **2.5 million jobs** and reduce carbon emissions by up to **6 gigatons per year**[2]

1. IEA (2022), World Energy Outlook 2022, IEA, Paris https://www.iea.org/reports/world-energy-outlook-2022
2. Hydrogen Council. (2017). Hydrogen Scaling Up: A Sustainable Pathway for the Global Energy Transition

CARRARA–1 WELL DATA ANALYSIS | GEOSCIENCE AUSTRALIA

NDI CARRARA 1	
Depth (mGL)	694.6-694.7
Core tray #	0211
Facies association	Offshore
GA sample ID	2021330093
GA sample No.	7533205
TOC (wt%)	5.48

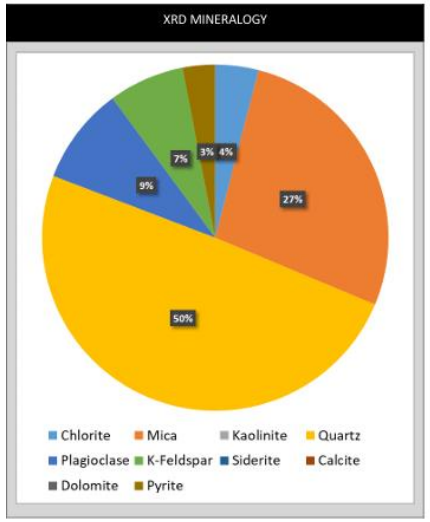


Figure 1: Core image with TOC and mineralogy data for sample 2021330093 (ref).

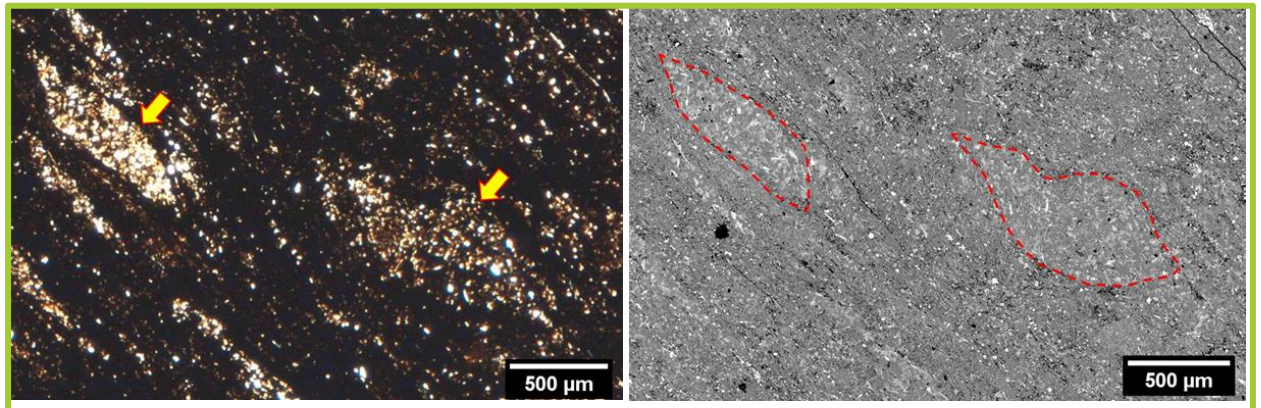


Figure 2: Polarised transmitted light image (left) and back scattered electron image (right), highlights kerogen porosity development (ref)

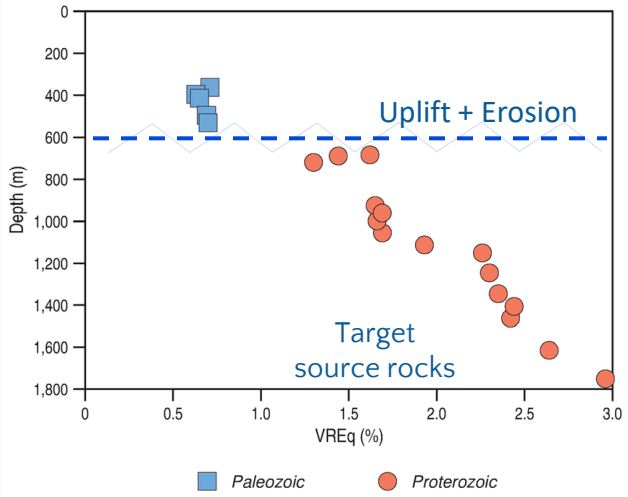


Figure 3 (left): Thermal maturity on bitumen reflectance data suggests two working petroleum systems are present in Carrara sub-basin. Younger Cambrian peak-oil mature source rocks and older Proterozoic gas mature source rocks (ref)

1. Crombez, V., Delle Piane, C., Dewhurst, D. N. 2022. *NDI Carrara 1 sedimentology, microstructural analyses, and sequence stratigraphy (Appendix 3)*. CSIRO.
2. Grosjean, E., Boreham, C., Jarrett, A., Butcher, G. 2022. *The energy resource potential of the Carrara Sub-basin revealed by new stratigraphic drilling.*

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