

## ASX ANNOUNCEMENT

30 January 2025

# QUARTERLY ACTIVITIES REPORT FOR PERIOD ENDING 31 DECEMBER 2024

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**Top End Energy Limited** (**Top End** or the **Company**) (ASX:TEE) is pleased to present its activities report for the quarter ended 31 December 2024 (the **Quarter**).

## HIGHLIGHTS OF THE QUARTER

- **Transformative Acquisition of Kansas Natural Hydrogen Project:** The Company entered into a binding conditional SPA to acquire Serpentine Energy Pty Ltd (**Serpentine**), along with its wholly owned subsidiaries and 100% working interest in the Serpentine Natural Hydrogen Project (**Project**) in Kansas, USA. The Project is strategically located in the heart of an active land rush, fueled by historical observations of natural hydrogen and a surge in recent exploration activity, including seismic surveys, drill site permitting, drilling and testing operations.
- **Significant acreage position in the evolving Beetaloo Sub-Basin, Northern Territory:** The Company retains a large, granted acreage position across multiple permits (EP 153, 154 and EP258) in the Northern and Southern Beetaloo Sub-Basin. These permits are adjacent to Tamboran Resources (ASX:TCN) who are currently preparing to stimulate and test their two significant Shenandoah wells. The Company's exploration strategy and further permit applications are structured to immediately benefit from the results of this activity.
- **Frontier South Nicholson Basin play potential confirmed as a likely Beetaloo Sub-Basin analogue:** The Company has a large position in the core South Nicholson Basin through its granted permit EP144. Two significant unconventional gas play fairways have been identified through analysis of offset activities with confirmed Proterozoic organic-rich shales with Total Organic Carbon (**TOC**) levels reaching up to 3.1wt%. Access to the adjacent Northern Gas pipeline allows a clear pathway to commercialisation.
- **Leadership optimised for future operations:** Changes to Top End's Board and Management announced during the Quarter provide the Company with key operational management and leadership experience.

## TRANSFORMATIVE ACQUISITION OF KANSAS NATURAL HYDROGEN PROJECT

During the Quarter the Company entered into a binding conditional SPA to acquire Serpentine, along with its wholly owned subsidiaries and 100% working interest in Project. The Project is strategically located in the heart of an active land rush, fueled by historical observations of

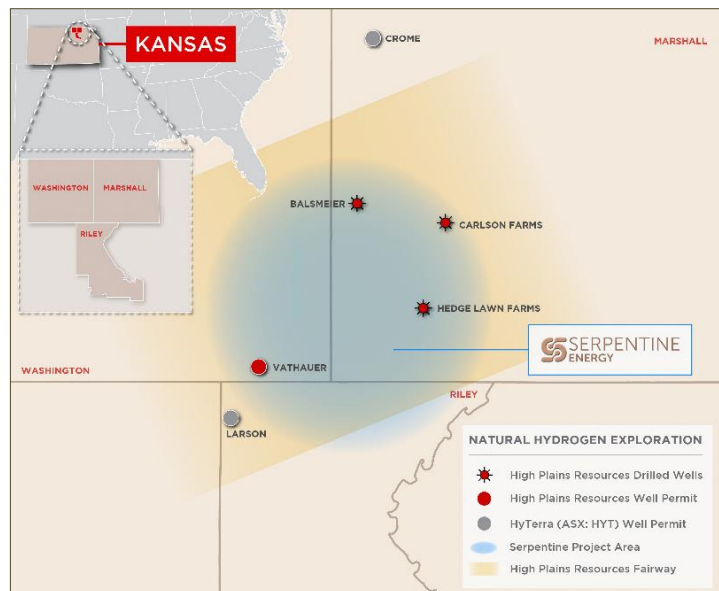
natural hydrogen and a surge in recent exploration activity, including seismic surveys, drill site permitting, drilling and testing operations.

### About the Serpentine Natural Hydrogen Project

Between January and November 2024, Serpentine negotiated and executed more than 100 leases with private landowners (**Leases**) totaling approximately 20,000 acres across Marshall, Washington and Riley counties, Kansas.

The Project area is situated in a highly sought-after play fairway that has seen a significant increase in operations, mostly led by High Plains Resources LLC, a 'stealth-mode' operating company.

Additionally, the Project benefits from regional access to rail, road, and gas pipelines, to support the efficient delivery of hydrogen feedstock to downstream customers and the potential future production of clean ammonia to meet growing Mid-Western demand.



Pursuant to each of the Leases, Serpentine is granted the exclusive right to explore and produce all gases, including hydrogen and helium. Under Kansas law, ownership of gases is vested in the mineral rights owner, who holds the right to transfer or lease those rights to a third party. While the specific commercial terms can vary, Serpentine retains a 100% working interest and 80% net revenue interest (with the remaining 20% revenue interest held by the mineral owner and/or other parties, as is customary in US leasing), for a period of 5 to 10 years (inclusive of an optional extension). All Leases were negotiated on an arm's length basis and represent market-based terms.

### About Serpentine Energy

Serpentine Energy is an Australian private company, established in October 2023, with a focus on advancing the exploration of naturally occurring hydrogen. Its Kansas based project is capitalising on prime acreage and access to the expansive Mid-Western markets, to drive America's next energy boom.

### Unique Geological Setting and Project Prospectivity

Northeastern Kansas is a focal point of immense evaluation due to the unique combination of critical geological factors required for the generation, migration and preservation of natural hydrogen. Hydrogen is generated through naturally occurring geochemical processes within the neighbouring Mid-Continental Rift system. One of the key processes is serpentinization, in

which subsurface aquifers interact with iron-rich rocks and release hydrogen gas as a by-product. Buoyant hydrogen gas migrates along fractures and faults before accumulating in geological traps.

East of the Mid-Continental Rift are two key structural features; the Nemaha Uplift and Humboldt Fault, which extend laterally through the Project. The Nemaha Uplift is the culmination point for the migration of hydrogen gas, with numerous exploration wells drilled on the structure observing natural hydrogen of significant concentrations.

It is this presence of a working, subsurface natural hydrogen system which first spurred targeted exploration drilling in the area in 2023.

### Transaction Terms

The Company has entered into the SPA with the major vendors/founders of Serpentine to acquire 100% of Serpentine (**Proposed Transaction**). Completion under the SPA is subject to a number of pre-conditions, including:

- (a) entry into, and completion under, Share Purchase Agreements with the minor vendors;
- (b) the Company raising not less than \$4 million by way of a placement of Company shares at an issue price of \$0.10 per share;
- (c) the Company completing due diligence on Serpentine;
- (d) the Company entering into a service agreement with Luke Velterop (**Service Agreement**); and
- (e) the Company obtaining all necessary shareholder and regulatory approvals. Shareholder approval was obtained at an EGM held on 28 January 2025.

Under the terms of the Proposed Transaction, the Company has paid \$300,000 in cash to Serpentine and shall issue 107,000,000 Shares and 26,750,000 Options to the major and minor vendors (**Vendors**). The Options shall have an exercise price of 15c and expire 3 years from the date of issue (**Options**). The Company will also apply for official quotation of the Options.

In addition, the Company has agreed to pay Inyati Capital Pty Ltd (**Inyati**) a facilitation fee of 15% in Shares and Options, for introducing the Proposed Transaction to the Company and facilitation services provided in respect of the Proposed Transaction. The facilitation fee will be satisfied by the issue of 16,500,000 Shares and 4,012,500 Options to Inyati (and/or its nominees). Inyati is not a related party of the Company.

Of the Shares issued to the Vendors and Inyati, 25% will be subject to a 3-month voluntary escrow, 25% will be subject to a 6-month voluntary escrow, 25% will be subject to a 12-month voluntary escrow and 25% will not be subject to escrow.

### Placement Terms

The Company received firm commitments from sophisticated investors to raise \$6 million (before costs) by way of the placement of 60,000,000 Shares at an issue price of \$0.10 per Share (**Placement**). The Placement will be conducted in two tranches.

Tranche 1, was undertaken during the Quarter with the Company's existing placement capacity under ASX Listing Rules 7.1 and 7.1A., and consisted of issuing 22,070,313 Shares raising \$2,207,031. Tranche 2, which will comprise issuing 37,929,687 Shares to raise \$3,792,969 under ASX Listing Rule 7.1 was subject to shareholder approval, which was received on 28 January 2025.

The Placement was managed by Inyati Capital. Inyati will receive a 2% management fee and 4% capital raising fee, based on gross proceeds. In addition, the Company will issue up to 8m Options to holders of AFSs who have assisted with the Placement.

### Use of Funds

Funds raised from the Placement, along with existing funds shall be applied to:

- (a) Development of the Project, including:
  - Increase lease holdings in Kansas;
  - Technical studies;
  - Exploration drilling preparation; and
  - Potential expansion to additional US States;
- (b) Continued development of the Company's existing assets; and
- (c) Working capital

### Appointment of Luke Velterop

Upon announcement of the Proposed Transaction the Company retained the services of Serpentine's founder, Luke Velterop as Vice President, US Operations. Mr Velterop shall be US based and responsible for all aspects of driving the development of the Project and Serpentine's US Hydrogen Operations generally.

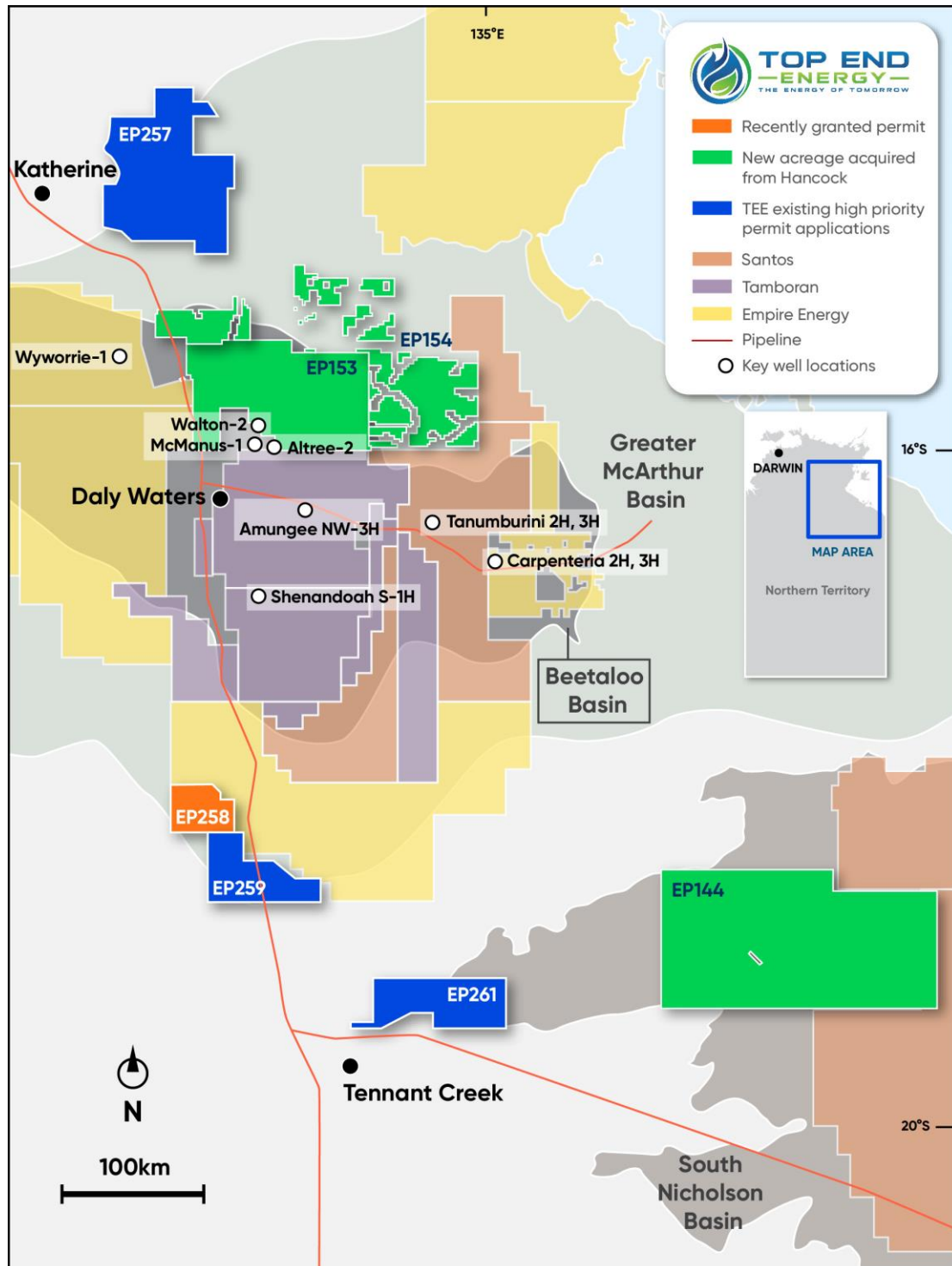
Mr Velterop will be paid USD\$16,667 per month and be otherwise retained on standard terms. This arrangement will run until Completion of the Proposed Transaction, at which time it will be replaced with the Service Agreement.

Subject to shareholder approval, which was received on 28 January 2025, and completion of the Proposed Transaction, Mr Velterop (and/or his nominee) will be entitled to receive the following performance rights that are convertible into fully paid ordinary shares in the Company on a 1-for-1 basis (**Performance Rights**) on reaching the following milestones:

- (a) 7.5 million Performance Rights upon the Company reaching a lease holding of 25,000 acres at the Project, with all acres acquired post-completion of the Proposed Transaction to be contiguous to existing leases and/or consistent with the Company's geological model, expiring 2 years from their date of issue;

- (b) 7.5 million Performance Rights upon the Company reaching a share price of not less than \$0.25 or a market capitalisation of \$62.5 million (in each case based on a 20-day VWAP), expiring 2 years from their date of issue;
- (c) 7.5 million Performance Rights upon the drilling of an exploration well on acreage owned by the Company with recovery from a primary reservoir of a gas sample (through well test or downhole sampling tool) containing greater than 50% combined volume of hydrogen and helium, expiring 3 years from their date of issue; and
- (d) 7.5 million Performance Rights upon the Company announcing that it has secured an off-take or downstream joint venture partner in relation to the US Hydrogen Operations expiring 5 years from their date of issue.

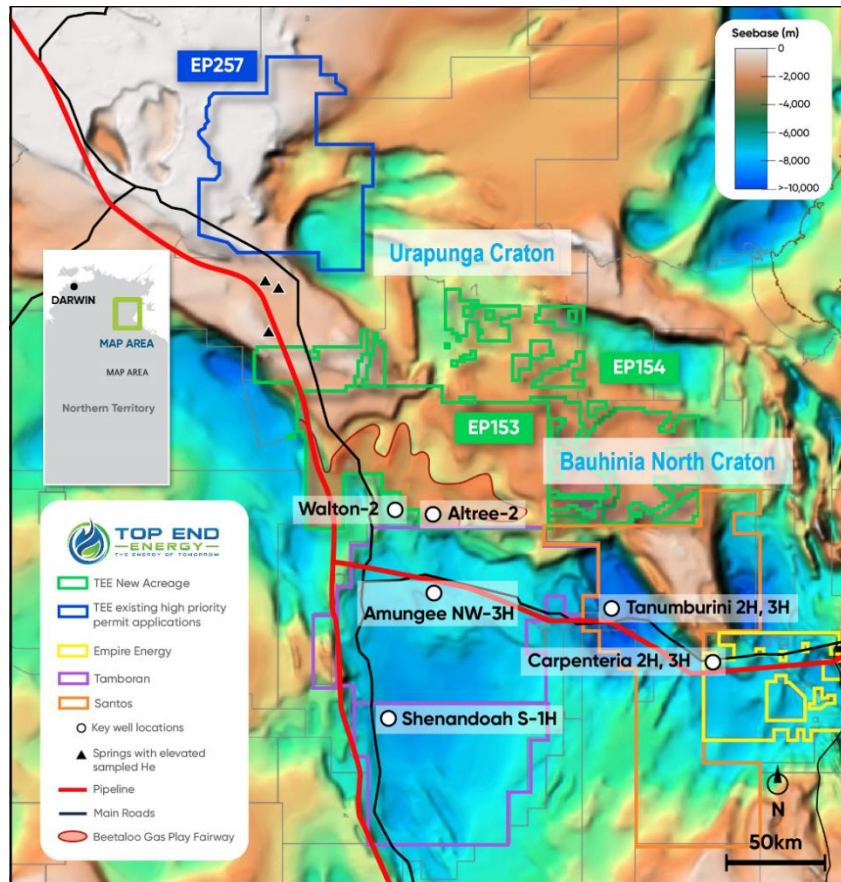
## FOCUS ON THE BEETALOO SUB-BASIN WITH GRANTED PERMITS AND ADJACENT APPLICATIONS



Top End's diversified portfolio of granted acreage, highlights its strong position within the priority Beetaloo Sub-Basin and South Nicholson Basin.

Drilling and testing activities currently being undertaken by multiple operators in the core Beetaloo Sub-basin continue to mature the significant unconventional natural gas potential of the region. Key well testing result announcements from other basin operators are expected in the next month, as well as development of plans for respective pilot plants, potentially paving the way for expansion of operations and commercialisation of discovered resources. It has been interpreted that unconventional gas bearing formations extend into the southern margins of EP 153 and 154 and the Southern EP 258. These permits are strategically located to be able to benefit from future development activities and provide an avenue to commercialisation for any discovered resources.

Additionally Top End has identified potential for natural hydrogen and helium over EP 153 and 154, which is interpreted as a natural extension of the play fairway mapping completed by the Company in 2023 over its existing EP application 257. The presence of granitoid basement geology and the Urupunga Fault Trend provide potential charge and migration focus for natural hydrogen and helium. The Cambrian aged limestones present in the area are also interpreted to be conduits for thermal fluids migrating to surface and provide an initial focus area for sampling and other early-stage exploration activities.



*Multiple play potential on the northern flank of the Beetaloo Sub-Basin*

## A LARGE UNCONVENTIONAL GAS PLAY IN GRANTED TENURE ANALAGOUS TO THE BEETALOO SUB-BASIN

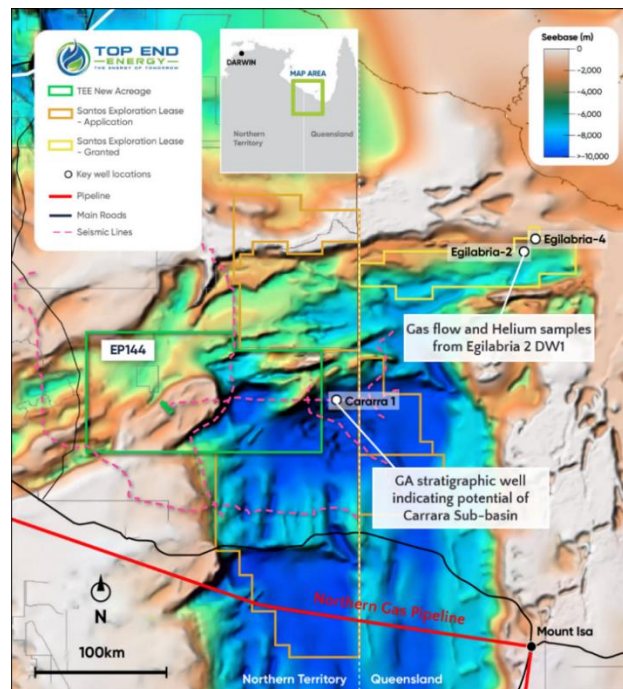
EP 144 represents highly prospective underexplored acreage in a proven hydrocarbon region, with potential ties to the Proterozoic shale plays of the Lawn Hill Platform and the Beetaloo Sub-basin Velkerri Formation. Santos Ltd (ASX:STO) is the only other energy company with a granted acreage position in the South Nicholson Basin.

EP 144 is strategically located in proximity to the Northern Gas Pipeline, which provides access to Mount Isa and the East Coast gas market. There is significant existing hard rock exploration and mining activity in the area (including Teck Resources, South32 and Endeavour Resources), providing potential opportunities for additional data sources, exploration collaboration and offtake counterparties.

A Co-existence and Exploration Agreement is in place with the Traditional Owners of the EP 144, which is in year three of the initial five-year exploration period, and renewable for up to two further periods of up to five years each. Environmental Management Plans and Well Operations Management Plans have been approved for drilling of stratigraphic wells on the Permit, and the Company is engaging with pastoral lease holders to extend existing Land Access Agreements.

Top End has identified the potential for two significant conventional and unconventional gas play fairways on the EP 144:

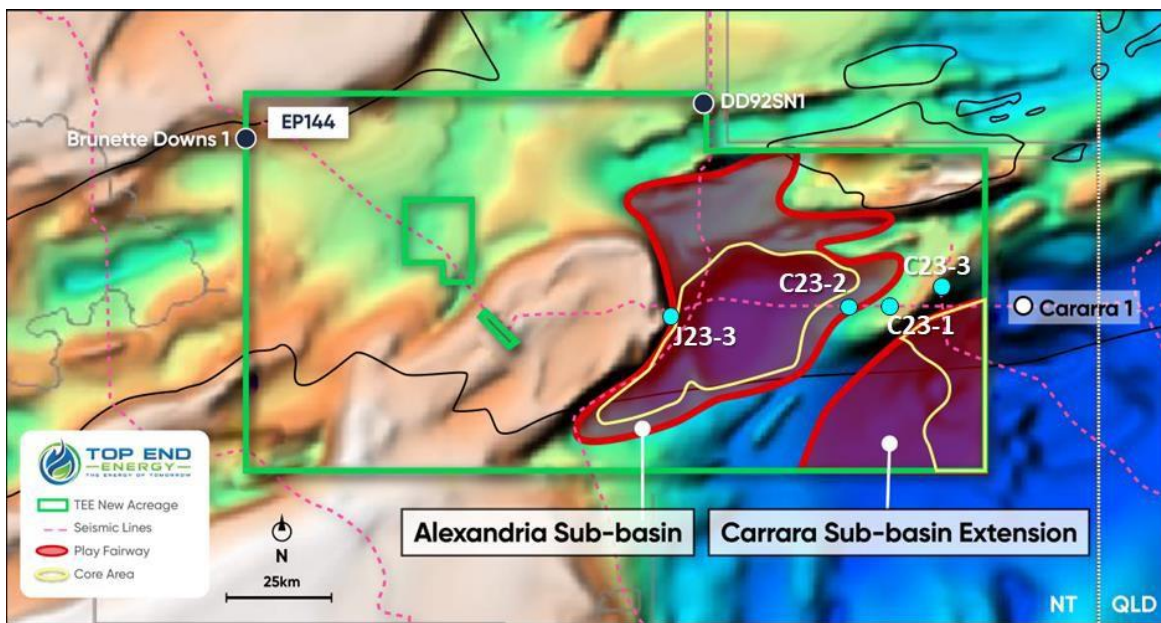
1. The **Carrara Sub-basin Extension**: ~600km<sup>2</sup> (~125,000 acres) of high potential core play fairway with running room of up to ~1,200km<sup>2</sup> (300,000 acres); and
2. The **Alexandria Sub-basin**: ~1,100km<sup>2</sup> (~270,000 acres) of high potential core play fairway with running room up to ~2,300km<sup>2</sup> (~580,000 acres).



EP144 location covering the South Nicholson Basin including proximate infrastructure

Following observation of Proterozoic black shale sections in multiple drill hole cores obtained from Encounter Resources Ltd, the Company procured samples from the cores to be assessed for TOC, pyrolysis and thermal maturity. Preliminary analysis by Stratum Reservoir in the United States confirms organic-rich source rocks are present within the Permit with up to 3.1wt% TOC and HI 24 mg HC/gTOC in the sampled intervals. This is consistent with Lawn Hill shale interval intersected in the NDI Carrara-1 well, which sampled up to 3.2 wt% TOC and mean HI 3 mg HC/gTOC<sup>1</sup>.

Further preliminary TOC, pyrolysis and thermal maturity evaluation remains ongoing. It is the Company's expectation that deeper source rock intervals are also present on the Permit, including the River sequence source rocks. The River sequence has been intersected by other historical wells across the South Nicholson Basin and interpreted on 2D seismic data to be present in the Permit.



Location of core holes in EP 144 with TOC of up to 3.1%

Helium and hydrogen potential has also been indicated, with samples collected from the NDI Carrara-1 well at up to 27% mol (air corrected). Helium was also present in samples collected during the Egilabria-2 well test (~0.9%).

Potential hydrogen gas seepage pathways and a potential structural trap in EP 144 have been identified on the 17GA-SN2 2D seismic line acquired by GA. Subsurface circular depressions (SCD's) observed on satellite imagery in the area are potentially linked to the hydrogen seepage pathways interpreted on the seismic.

<sup>1</sup> Refer to ASX Announcement "Organic-Rich Source Rocks on EP 144" (19 September 2024).

## **QUEENSLAND PERMIT WELL CONVERSION AND SURRENDER**

Work has commenced on converting the Barwinock-2 well located on ATP 1069 to a water well for the benefit of the land owner. This activity is underway and will complete prior to the required permit expiration and surrender date of January 31st 2025.

## **CORPORATE**

### **BOARD AND MANAGEMENT CHANGES**

During the Quarter Top End announced the appointment of Mr Patrick Burke as Non-Executive Director. Mr Burkes appointment followed the resignation of Non-Executive Director's Mr Mike Fischer and Mr Richard Lampe. Mr Burke has extensive legal and corporate advisory experience and over the last 20 years has acted as a director for multiple ASX listed companies, as well as NASDAQ and AIM listed companies

Composition of the Board did not and will not change as a result of the Proposed Transaction. The Board, subject to shareholder approval, which was received on 28 January 2025, and completion of the Proposed Transaction, shall be issued with 17.5 million Options as part of the Proposed Transaction.

Emmanuel Correia has stepped down as Chairman and will remain on the Board as a Non-Executive Director. Non-Executive Director Patrick Burke has assumed the role of Executive Chair, being the sole executive on the Board. He shall be paid \$180,000 p.a. (excluding super), be subject to a three-month termination period and otherwise on standard terms for an Executive Chair. Subject to the shareholder approval, which was received on 28 January 2025, Mr Burke shall also be issued with an additional 5 million Options as part of his appointment.

### **OTHER CORPORATE ACTIVITY**

- As per ASX Listing Rule 5.4.1, a summary of the Company's substantive oil and gas exploration activities undertaken during the Quarter is contained herein, with exploration expenditure during the quarter totalling circa A\$572,000.
- As per ASX Listing Rule 5.4.2, there were no substantive oil and gas production and development activities undertaken during the Quarter.
- Section 6.1 of the Appendix 5B provides for an amount paid to related parties of circa A\$234,000 being circa A\$234,000 for directors' fees and salaries.
- The Company has a cash balance of circa A\$2,759,000 at 31 December 2024.

- END -

This release is authorised by the Board of Directors of Top End Energy Limited.

For further information contact:

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## Appendix 1: Tenement Schedule (ASX Listing Rule 5.4.3)

Petroleum tenements held by the Company and its subsidiaries at the end of the quarter and their location.

| Permit / Application <sup>2</sup> | Location           | Interest % | Holder                              |
|-----------------------------------|--------------------|------------|-------------------------------------|
| ATP 1069                          | Queensland         | 100.00     | Tomorrow Energy Corporation Pty Ltd |
| EP 501                            | Western Australia  | 100.00     | Tomorrow Energy Corporation Pty Ltd |
| EP 258                            | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP 144                            | Northern Territory | 100.00     | McArthur Energy Pty Ltd             |
| EP 153                            | Northern Territory | 100.00     | McArthur Energy Pty Ltd             |
| EP 154                            | Northern Territory | 100.00     | McArthur Energy Pty Ltd             |
| EP(A) 254                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 256                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 257                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 259                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 260                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 261                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 262                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 263                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 264                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd          |
| EP(A) 265                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 274                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 275                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 276                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 277                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |
| EP(A) 278                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd                 |

<sup>2</sup> The Company's petroleum tenements in the Northern Territory under application, are marked (A). Grant of applications is subject to reaching agreements with traditional owners and native title holders pursuant to the Aboriginal Land Rights (Northern Territory) Act 1976 (Cth) and the Native Title Act 1993 (Cth).

| Permit / Application <sup>2</sup> | Location           | Interest % | Holder                     |
|-----------------------------------|--------------------|------------|----------------------------|
| EP(A) 279                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 280                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 281                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 282                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 283                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 284                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 285                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 294                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 295                         | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |
| EP(A) 312                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd |
| EP(A) 313                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd |
| EP(A) 314                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd |
| EP(A) 315                         | Northern Territory | 57.68      | Territory Gas Aust Pty Ltd |
| NTC/P(A) 14                       | Northern Territory | 57.68      | NT Gas Aust Pty Ltd        |

The Company will shortly commence a strategic review of its Northern Territory Permit Applications to focus on subsurface prospectivity and asset alignment. Highly prospective areas such as the Beetaloo Sub-basin and South Nicholson Basin will be prioritised along with additional acreage that supports natural hydrogen prospectivity. The results of this review will be updated in the next quarter.