



ENERGYQUEST

# Impact of no investment on gas supply

An independent report prepared by EnergyQuest  
for Australian Energy Producers

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## Contents

<b>List of Figures</b> .....	<b>3</b>
<b>Purpose</b> .....	<b>4</b>
<b>Summary</b> .....	<b>4</b>
Available supply for GPG .....	7
Available supply for industrial purposes .....	8
Available supply for residential and commercial purposes .....	8
<b>Background</b> .....	<b>9</b>
East coast gas market .....	9
West coast gas market .....	12
<b>Exploration</b> .....	<b>12</b>
<b>Modelling assumptions</b> .....	<b>14</b>
Supply cases .....	14
Ongoing Investment Case .....	14
Investment Ban .....	14
Prioritisation of demand .....	14
Northern Territory .....	15
Western Australia .....	15
<b>East coast results</b> .....	<b>15</b>
Ongoing Investment Case .....	15
Investment Ban .....	19
<b>West coast results</b> .....	<b>21</b>
Ongoing Investment Case .....	21
WA LNG exports .....	21
Investment Ban .....	22
<b>About EnergyQuest</b> .....	<b>24</b>
Our history .....	24
What we do .....	24
Our unique approach .....	24
Our capabilities .....	24
EnergyQuest Team .....	25
<b>EnergyQuest standard terms and conditions</b> .....	<b>26</b>

## List of Figures

Figure 1 Southern Region unmet gas demand by segment – Investment Ban .....	5
Figure 2 Available Queensland LNG feedstock – Investment Ban .....	5
Figure 3 Queensland unmet domestic demand by segment – Investment Ban .....	6
Figure 4 East Coast - Investment Ban impact .....	6
Figure 5 WA unmet domestic demand by segment – Investment Ban .....	7
Figure 6 Eastern Australia and NT Gas Pipelines and Basins.....	10
Figure 7 SWQ pipeline flows (east/north flow (+) west/south flow (-)).....	11
Figure 8 Exploration expenditure vs Brent oil price .....	13
Figure 9 Southern Region domestic gas demand and supply – Ongoing Investment Case .....	16
Figure 10 Potential for other supply sources to meet unfulfilled demand in the east coast, 2025-35 ..	17
Figure 11 Northern Region gas demand and supply – Ongoing Investment Case .....	18
Figure 12 Queensland LNG capacity and foundational contract commitments.....	18
Figure 13 Southern Region unmet gas demand by segment – Investment Ban .....	19
Figure 14 Queensland unmet domestic demand by segment – Investment Ban .....	20
Figure 15 Available Queensland LNG feedstock - Investment Ban.....	20
Figure 16 WA domestic gas demand and supply – Ongoing Investment Case.....	21
Figure 17 Available LNG feedstock and capacity .....	22
Figure 18 WA unmet domestic demand by segment – Investment Ban .....	23
Figure 19 WA LNG feedstock diversion to the domestic market – Investment Ban .....	23



## Purpose

This report examines the impact on gas supply of a ban on gas investment in line with The Greens' policy of no new gas, including their plan to immediately ban construction of new oil and gas infrastructure.<sup>1</sup>

The analysis is based on EnergyQuest forecasts for the east and west coast gas markets.

Two supply scenarios are modelled against demand:

1. Ongoing Investment Case – the Ongoing Investment Case in this study is defined to include ongoing supply from existing and known projects, including those that have not been sanctioned; assumes strong political support for ongoing natural gas production and favourable investment conditions.
2. Investment Ban – construction of new gas infrastructure is immediately banned, and production continues from existing infrastructure only.

Demand forecasts are based on Australian Energy Market Operator (**AEMO**) forecasts, extended to 2050 and reviewed based on EnergyQuest's analysis of demand.

The impact of each scenario on available supply for gas-fired power generation (**GPG**), industrial, commercial and residential purposes is assessed. High-level commentary on the impact of unmet demand for each purpose is provided. However, quantitative analysis of the potentially significant negative impact of the No Investment scenario on the economy, industry, jobs, government revenue, trade, emissions, etc. is outside the scope of this study.

Unmet domestic demand is assumed to result in the interruption of long-term LNG contracts with regional trading partners and the diversion of LNG feedstock to meet domestic demand, where possible, and the impact of each scenario on available LNG feedstock is also estimated.

The report also examines and provides commentary on recent Australian exploration trends.

## Summary

The Investment Ban scenario would bring forward and exacerbate forecast gas shortfalls resulting in major economic disruption in the Southern Region of the east coast market<sup>2</sup> and in the West Coast market.

For the Southern Region of the east coast, an investment ban would mean that:

- within two years supply to GPG could be interrupted and the Australian Domestic Gas Supply Mechanism (**ADGSM**) triggered, breaking long-term Queensland LNG contracts with regional trading partners
- within approximately five years there would be no gas available for GPG
- within a decade most industrial demand would go unmet and most industrial gas users would likely cease operations due to a lack of alternative energy sources, and
- in the longer term there would be significant disruption and potentially shortfalls for residential and commercial gas users.

Unmet demand (ie demand for which no supply is available) in the Southern Region of the east coast market under the Investment Ban scenario is shown in Figure 1.

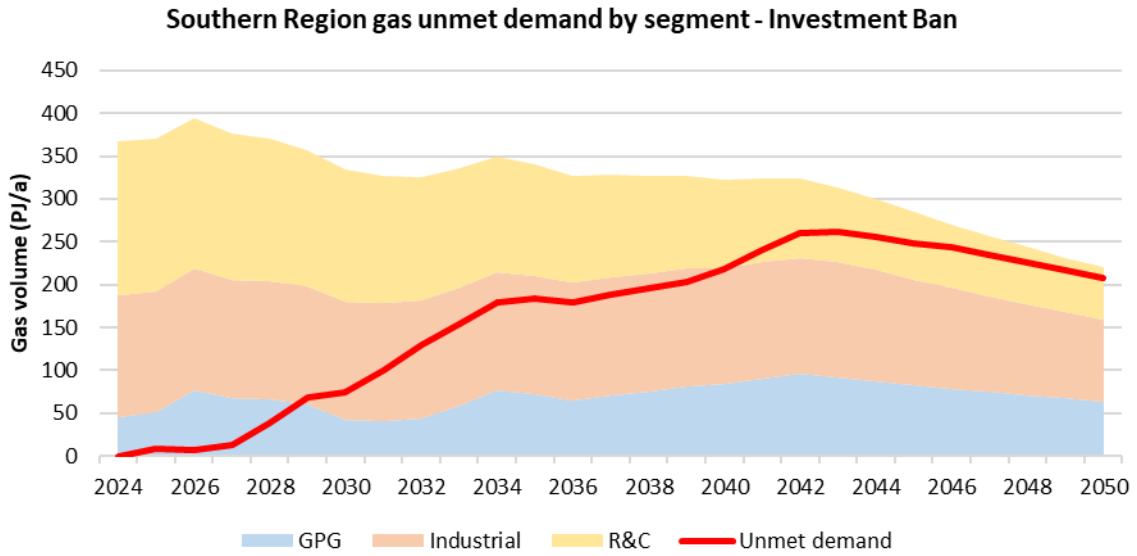
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<sup>1</sup> The Greens, '[Tackling the climate crisis – The Greens plan to phase out coal oil and gas and create jobs](#)', website (accessed 11 September 2024)

<sup>2</sup> The Southern Region includes NSW/ACT, Victoria, South Australia and Tasmania.



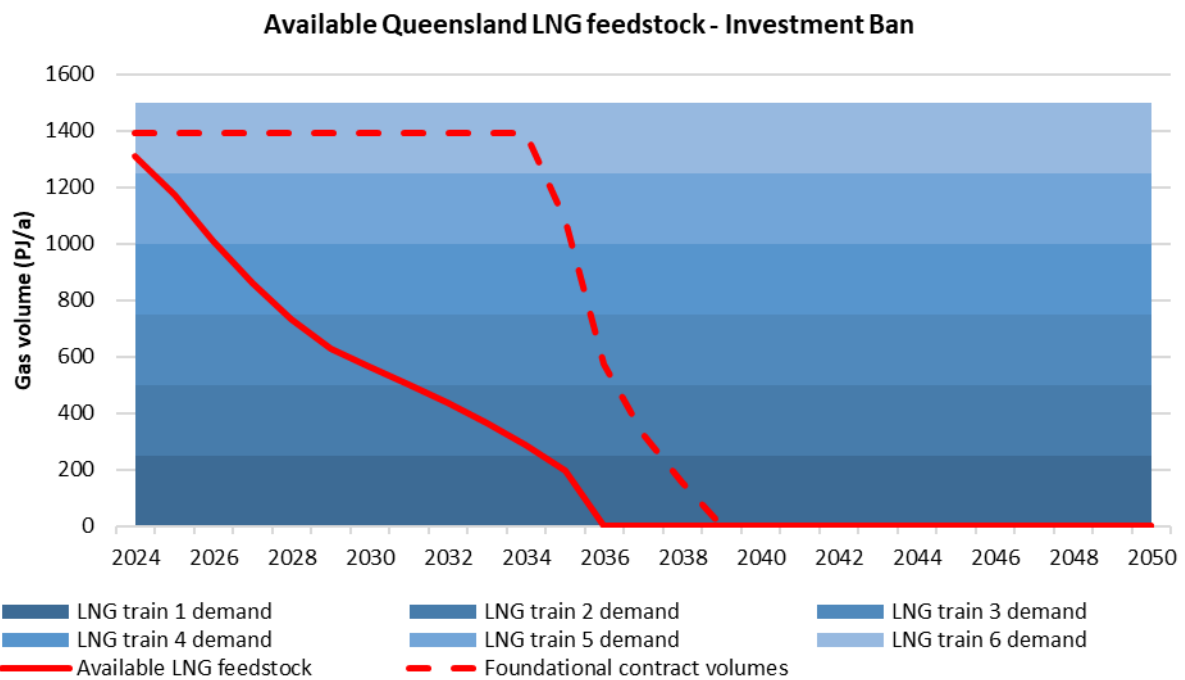
**Figure 1 Southern Region unmet gas demand by segment – Investment Ban**



Source: EnergyQuest analysis

An investment ban would also result in the rapid decline of Queensland LNG exports, resulting in long-term contracts for gas supply to regional trading partners being broken as LNG feedstock is diverted to meet demand in the Southern Region. Within four years half of Queensland’s LNG capacity would be unused, and within 12 years Queensland LNG exports would cease. Queensland foundational LNG contracts would need to be interrupted within a year and most of the remaining LNG supply committed would be unfulfilled, which would likely result in significant damage to Australia’s relationship with key trading partners and Australia’s attractiveness as a foreign investment destination (Figure 2).

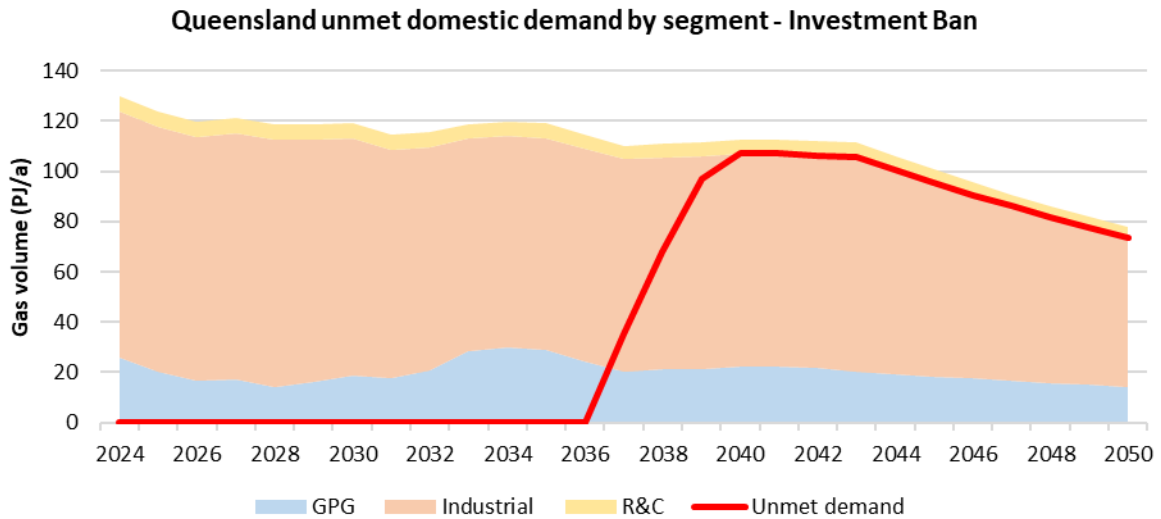
**Figure 2 Available Queensland LNG feedstock – Investment Ban**



Source: EnergyQuest analysis

Queensland domestic supply would continue to be met until around 2036 under an investment ban but once there is no available gas for LNG feedstock, supply for Queensland GPG and industrial purposes would start to be diverted to meet Southern Region residential and commercial demand. By 2040 gas supply would be sufficient to only meet residential and commercial demand in Queensland with some excess continuing to be diverted to the Southern Region to 2050 (Figure 3).

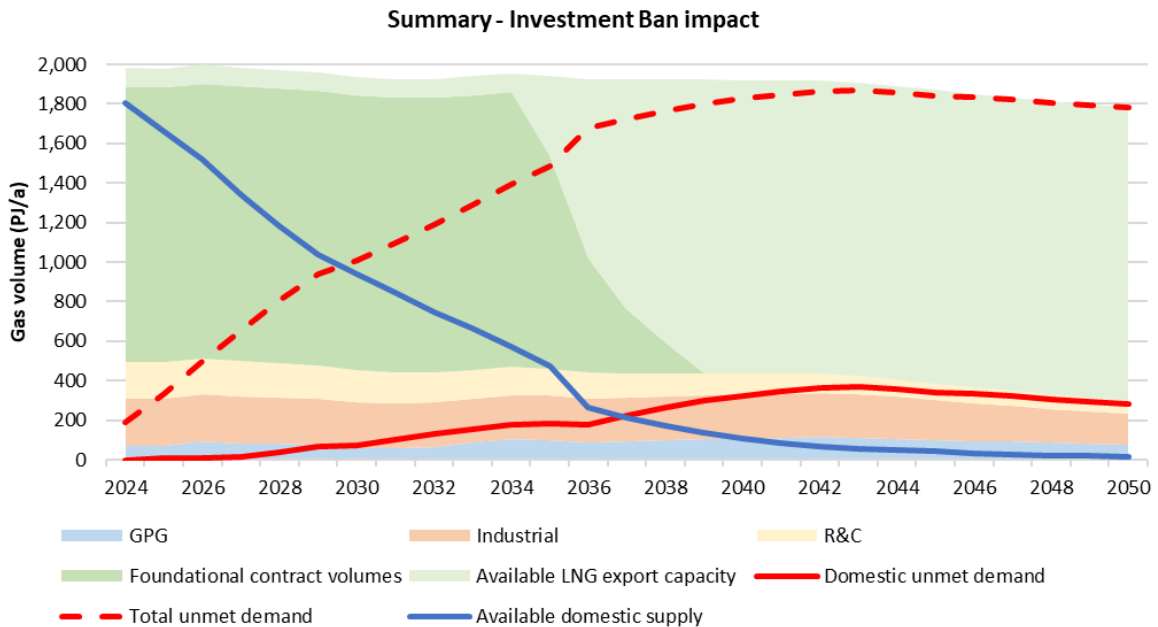
**Figure 3 Queensland unmet domestic demand by segment – Investment Ban**



Source: EnergyQuest analysis

The above analysis is brought together into a single summary chart in Figure 4.

**Figure 4 East Coast - Investment Ban impact**

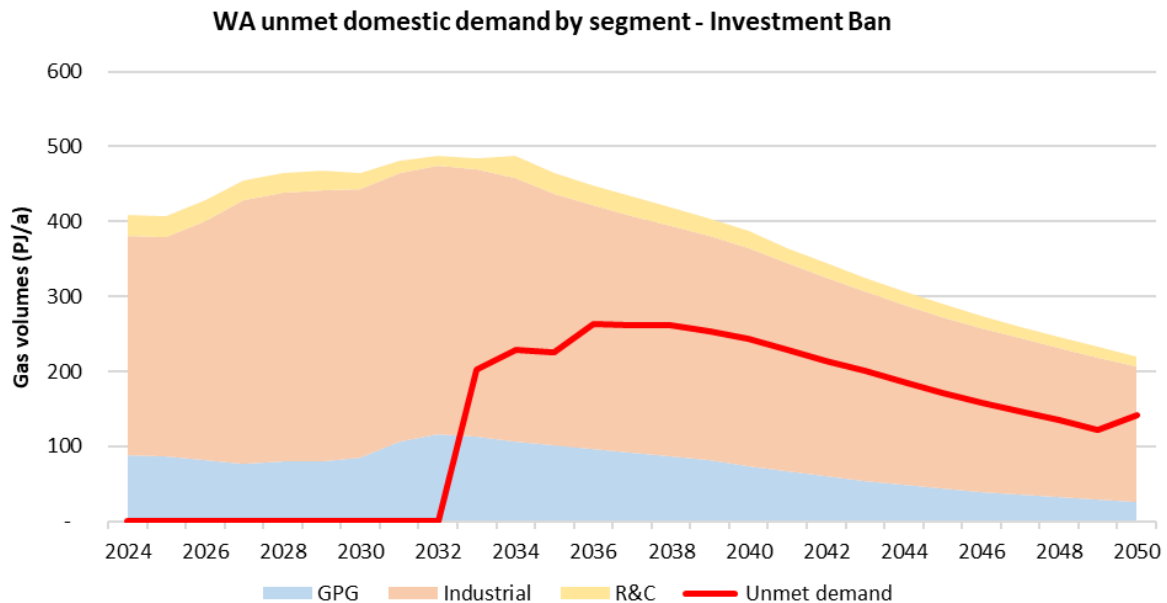


Source: EnergyQuest analysis

For the west coast market, under an investment ban there would be sufficient gas available for domestic demand until 2032, which is the modelled end date for supply from the North West Shelf (NWS) Project via the Karratha Gas Plant (KGP). Once the NWS ceases production a shortfall quickly

emerges due to lack of domestic gas processing capacity with no gas available for GPG and more than half of WA's industrial gas demand would go unmet by the mid-2030s.

**Figure 5 WA unmet domestic demand by segment – Investment Ban**



Source: EnergyQuest analysis

### Available supply for GPG

EnergyQuest forecasts overall rising demand for GPG over the next decade as coal-fired power generation (**CPG**) is withdrawn, which is in line with the AEMO Integrated Systems Plan Orchestrated Step Change scenario. In the long-term, renewable energy supply is expected to increase and result in a decline in GPG, but renewable energy capacity is not expected to be sufficient to achieve this outcome within the next decade.

Under the Investment Ban scenario there is no gas available for GPG in the east coast by 2029 and in the west coast by the early 2030s. As a result, diesel-fired power generation (**DPG**) and/or CPG would be needed to support variable renewable generation and to avoid electricity shortfalls, requiring the further extension of life of CPG plants and resulting in an increase in emissions by approximately 35%-75% relative to GPG<sup>3</sup>.

DPG would be needed to fill GPG's existing role of providing supply to meet peak electricity demand, which CPG cannot do. The National Electricity Market (**NEM**) currently has 1.2 GW of DPG capacity and 11.1 GW of GPG capacity<sup>4</sup>, meaning an approximate tenfold increase in DPG capacity would be required to provide equivalent capacity as existing GPG. We note that while, in principle, some GPG could be converted to DPG an investment ban may preclude such conversions and the construction of new DPG capacity, meaning significant shortfalls in electricity supply would result.

A switch from GPG to DPG and CPG would undermine the achievement of state and federal government emissions reduction targets for 2030. The Western Australian Government's 2030

<sup>3</sup> Australian Government, '[National Greenhouse Accounts Factors: 2023](#)', 6 October 2023

<sup>4</sup> AEMO, '[Generation information](#)', 27 May 2024



emissions reduction target is explicitly linked to the closure of government-owned CPG which in the timeframe proposed would not be possible without GPG.<sup>5</sup>

### Available supply for industrial purposes

EnergyQuest forecasts steady industrial demand for gas over the next decade on the east coast and rising demand in the west coast. Examples of industrial users include alumina smelters, ammonia and ammonium nitrate manufacturers, fertiliser manufacturers, iron and steel smelters, mining, paper and packaging manufacturers, cement, and glass manufacturers.

Industrial demand is dependent on the relative economics of gas use versus electrification, the extent to which commercially viable alternatives to gas are available for industrial production processes, and corporate emissions reduction targets.

A major factor in ongoing demand for gas by industrial users is that at present some industrial processes (e.g. ammonia, alumina, urea, iron and steel, cement) are reliant on fossil fuels for heat or feedstock and there are no commercially viable alternatives available. Potential alternatives are under development and industrial demand is therefore expected to reduce over time due to assumed switching to zero emissions alternatives. Demand for gas may also be maintained to the extent that emissions are abated with carbon capture and storage (CCS). It is difficult to predict when such alternatives will be commercially available, but AEMO forecasts<sup>6</sup> indicate industrial demand will continue essentially at current levels to 2043.

This timeframe is relevant in the current context as the Investment Ban scenario indicate industrial demand would go unmet in the east coast Southern Region from the late 2020s, and in the west coast from the early 2030s. Gas supply shortfalls to the extent forecast would place significant upwards pressure on gas prices and industrial operations that are reliant on ongoing, competitively priced natural gas supply would therefore be rendered uneconomic, leading to economic contraction and associated job losses.

### Available supply for residential and commercial purposes

Residential and commercial gas supply would be impacted last, with shortfalls in the east coast market from 2040 under the Investment Ban scenario – after all gas supply to power generation and industrial customers has ceased. Residential and commercial gas prices could be impacted well before this time given the overall dynamics in the market under the Investment Ban scenario. The reason for this outcome is that Queensland has relatively low residential and commercial demand and Queensland's gas production would be sufficient to meet Queensland demand to 2050 (on the assumption that Queensland residential and commercial are prioritised over southern state residential and commercial users). WA also has relatively low residential and commercial demand and sufficient supply for these purposes to 2050. This outcome reflects the benefits that accrue to Queensland and WA from supporting gas development, while Victoria and NSW are already facing supply shortfalls which would become severe in the event of an investment ban.

The use of gas for residential and commercial purposes can in many cases be electrified but doing so can come at significant cost and additional electricity demand, which in the Investment Ban scenario would also be severely strained.

The Victorian Government estimates the cost of converting an existing home with solar power to electrical appliances to be \$13,200 including the solar hot water rebate but excluding site-specific upgrade costs such as switchboard upgrades.<sup>7</sup> Victoria has approximately two million households and

<sup>5</sup> WA Government, '[Government Emissions Interim Target](#)', 23 September 2022

<sup>6</sup> AEMO, '[2024 Gas Statement of Opportunities](#)', 2 March 2024

<sup>7</sup> Department of Energy, Environment, and Climate Action, '[Embracing electricity to cut your bills at home](#)', October 2023





businesses already connected to the gas network.<sup>8</sup> The indicative cost of electrifying Victorian residential natural gas use is therefore approximately \$26.4 billion not accounting for site-specific electricity upgrade costs or potential price volatility.

The cost of switching from gas to electricity can also be significant for commercial users, and some commercial users continue to prefer gas. For example, the Restaurant and Catering Association has indicated a strong preference for natural gas amongst its members<sup>9</sup> and a survey by the Victorian Chamber of Commerce found that:<sup>10</sup>

- 45 per cent of respondents won't have to change gas appliances in next 10-20 years.
- 68 per cent can't currently switch to renewable gas.
- 81 per cent cite cost as main barrier to switching from gas to electricity.
- 74 per cent are not financially planning to transition to cleaner energy sources.
- More than half said they can't move away from natural gas as their business processes rely on it and it cannot be transitioned to another energy source.

Therefore, while it may be technically feasible to transition a significant proportion of residential and commercial gas demand to alternative sources by 2040 there would be significant costs which are likely to be prohibitive for some users.

Electrification of natural gas demand would also require a significant increase in generation capacity which would come at additional cost. For example, Victoria's expected residential and commercial gas use in 2024 is 121 PJ. The energy content of 121 PJ of natural gas is equivalent to 33.6 TWh of electricity (not accounting for differences in efficiency between gas and electrical appliances which can be significant) which compares to 47.1 TWh electricity generation in Victoria over 2023.

## Background

### East coast gas market

Australia's east coast market can be divided into the Northern Region and Southern Region.

The Northern Region includes Queensland and the Northern Territory (**NT**) which are linked by pipeline but the current configuration limits gas flow from the NT beyond Mt Isa. Supply from Queensland predominantly comes from coal seam gas (**CSG**) fields. Unlike conventional gas production, CSG requires ongoing investment in the region of \$1 billion per year to maintain production levels. Production from existing wells declines by approximately 10% per year meaning that new wells need to be drilled or supply quickly declines.

The major source of supply to the Southern Region has historically been the large offshore fields in the Gippsland Basin but these fields are now reaching their end of life. Gippsland production is already declining and expected to decline steeply from 2026. The result will be a supply gap that by the mid-2030s is projected to reach almost half of Southern Region demand. EnergyQuest Ongoing Investment Case forecasts for the east coast see the supply gap being met by regassification of LNG sourced from Australian or overseas LNG sources.

Queensland hosts three LNG export projects that account for 1,310 PJ/a or 70% of total Queensland and Southern Region demand based on estimates for 2024. Queensland has a significant industrial

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<sup>8</sup> Ibid

<sup>9</sup> Restaurant and Catering Association, '[Submission to the Future Gas Strategy](#)', 27 November 2023

<sup>10</sup> Victorian Chamber of Commerce, '[Chamber survey highlights business cost of energy transition](#)', 21 March 2024



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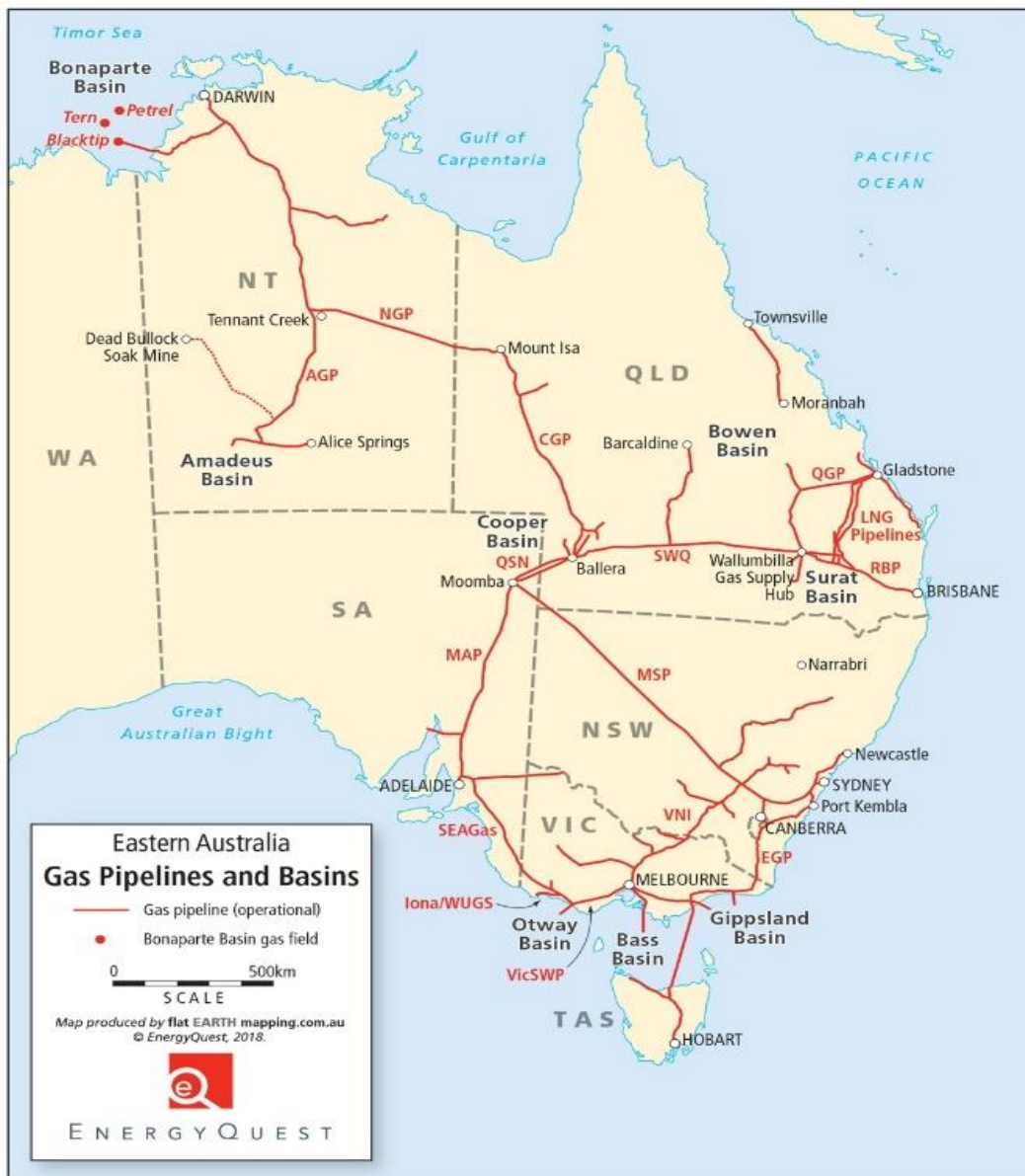
base that uses 98 PJ/a of natural gas, GPG that uses 26 PJ/a, and relatively low residential and commercial natural gas demand at 6 PJ/a.

Residential and commercial is the largest demand segment use of the Southern Region at 180 PJ/a, primarily due to the use of gas for space heating during colder months. The Southern Region also has a significant industrial base that uses 142 PJ/a, and GPG that uses 45 PJ/a.

Supply to the Southern Region from Queensland comes via the South West Queensland Pipeline (**SWQP**) which runs between Wallumbilla in South East Queensland and Ballera in South West Queensland. Ballera in turn is connected to the Moomba Hub by the Queensland to South Australia and NSW Link (**QSN Link**), and Moomba then supplies gas to the Southern Region via the MSP and Moomba-Adelaide Pipeline (**MAP**).

Australia’s east coast pipeline network is shown in Figure 6. The network is one of the largest geographic gas networks in the world, albeit with relatively modest volumes of gas throughput.

**Figure 6 Eastern Australia and NT Gas Pipelines and Basins**



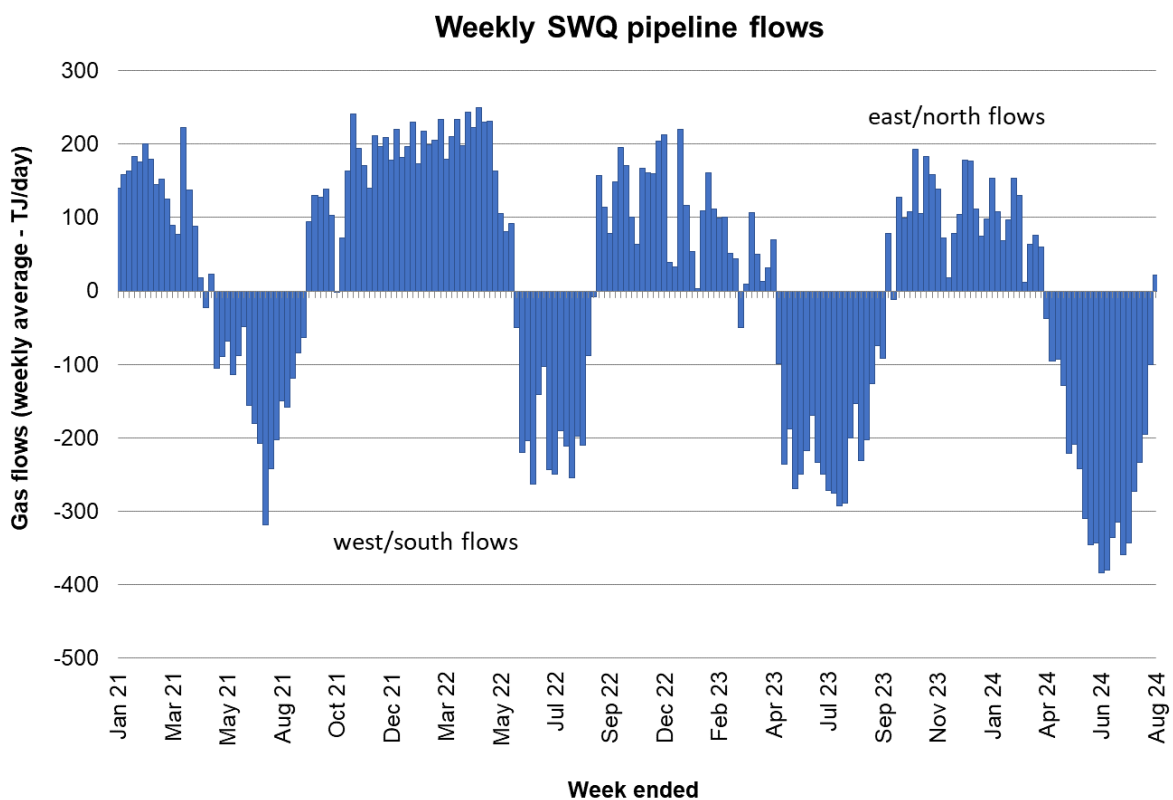
Source: EnergyQuest



Supply from Queensland to the Southern Region is therefore constrained by the capacity of the QSN Link which is 165 PJ/a. If Southern Region demand exceeds supply from within the Southern Region by more than 165 PJ/a there will be demand that goes unmet without investment in pipeline expansion.

At present gas typically flows north from the Southern Region to Queensland during warmer months, and south from Queensland when demand peaks in the Southern Region during colder months (Figure 7). Peak demand in the Southern Region is also met with supply from gas storage and gas production in the Southern Region, mainly from the Gippsland Basin but also from the Cooper and Otway Basins.

Figure 7 SWQ pipeline flows (east/north flow (+) west/south flow (-))



Source: EnergyQuest, AEMO

Pipelines running from Queensland are already running at capacity during peak demand periods in the Southern Region. This means as the Gippsland Basin declines and significant annual supply shortfalls emerge in the Southern Region, the capacity of the QSN Link will not be sufficient to meet Southern Region demand.

The Gippsland Basin Joint Venture (**GBJV**) supplies most of the gas coming from the Gippsland Basin via the Longford Gas Plant. Longford has up to 810 TJ/d of peak day capacity<sup>11</sup> but the GBJV has advised of planned closures starting with Gas Plant 1 in July 2024, followed by Gas Plant 3 later in the decade which will reduce Longford's maximum daily supply capacity to 700 TJ/d in 2024 and then to 420 TJ/d. Without increased supply from southern states, matching this volume of supply would require an approximate doubling of capacity in the north to south pipeline system.

<sup>11</sup> ['Victorian Gas Planning Report Update'](#), March 2024



## West coast gas market

The west coast gas market has four LNG projects in the north west of WA that provide 62% of the state's domestic gas supply, with several additional offshore fields that supply the domestic market only and some limited existing supply from onshore fields.

WA has a large industrial base that uses 271 PJ/a of natural gas, equivalent to 70% of total domestic WA demand based on 2024 estimates.<sup>12</sup> GPG in the South West Interconnected System (**SWIS**), which covers a region that includes Perth and most of WA's population, uses 91 PJ/a of natural gas. Residential and commercial use is relatively low at 28 PJ/a.

A significant difference between the west coast and east coast markets is that in the west coast the Dampier-Bunbury Natural Gas Pipeline (**DBNGP**) operates at approximately 1,200 TJ/d and provides ample capacity to transport gas supply from the north-west to demand centres in the south-west of WA. Capacity in the DBNGP and WA's pipeline network more broadly is not expected to be a constraint in the same manner as the QSN Link in the east coast market.

An additional point of difference between the east and west coast markets is that a 19% increase in demand is forecast for the west coast from 2024-2033. Reasons for the rise in demand include:

- GPG is projected by AEMO to rise from 209 TJ/d in 2027 to 359 TJ/d in 2032 (an increase of 72%) to compensate for the retirement of CPG as, while renewable generation capacity is increasing, renewable generation is not expected to be sufficient to compensate for the retirement of CPG over this period.<sup>13</sup> Renewables are expected to progressively reduce GPG demand over the long-term.
- Industrial demand is expected to increase significantly with the construction of the Perdaman Urea project alone adding 130 TJ/d<sup>14</sup> to WA domestic gas demand (equivalent to 12% of 2023 demand), potential expansions to existing industrial production such as the CSBP ammonia expansion, switching from coal to gas for some operations, increasing demand for GPG from the mining sector, and ongoing demand for gas for mineral processing.

## Exploration

Petroleum exploration in Australia has reached a critical low.

The low levels of exploration are illustrated by a comparison between exploration expenditure and the Brent oil price. Higher prices provide an investment signal to explore and for decades there was a correlation between the Brent oil price and exploration, but in the last decade prices have risen significantly while exploration has trended lower (Figure 8).

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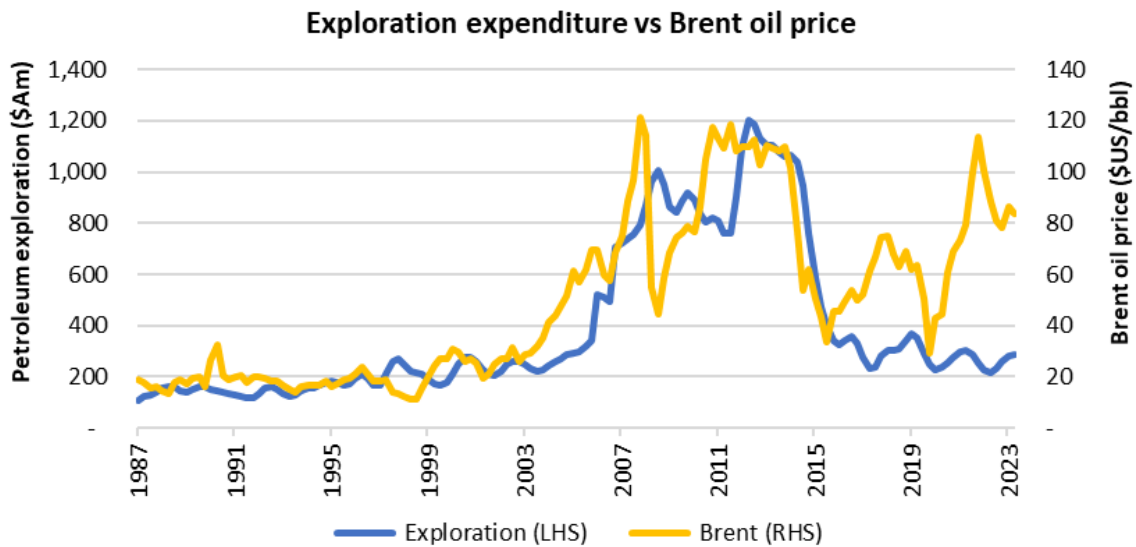
<sup>12</sup> We have included GPG associated with mining operations in the industrial category.

<sup>13</sup> AEMO, '[2023 Western Australia Gas Statement of Opportunities](#)', 22 December 2023

<sup>14</sup> Woodside Energy, '[Long-term domestic gas sale between Woodside and Perdaman becomes unconditional](#)', 26 April 2023



Figure 8 Exploration expenditure vs Brent oil price



Exploration and development in the past decade has been impacted by slow approvals<sup>15</sup>, ambivalence<sup>16</sup> or outright hostility<sup>17</sup> to petroleum activities from environmental activists, and some governments, and numerous legal challenges<sup>18</sup>.

Notwithstanding these challenges there remains some ongoing onshore exploration which will be important to ensure future demand is met. The Perth Basin in WA has seen positive exploration results,<sup>19</sup> as have explorers seeking deep gas in the Bowen Basin<sup>20</sup>, and there is ongoing work to bring the Beetaloo Sub-Basin into production. The resource in the Bowen and Beetaloo is potentially very large.

The offshore exploration 'conveyor belt' had until recently stalled but could potentially restart with the release of new exploration acreage.<sup>21</sup>

Contrary to common perceptions, exploration is required just to maintain production and not just to address growth. Even with exploration discoveries, maintaining production levels and offsetting the decline of large mature fields is a challenge.<sup>22,23</sup> Exploration discoveries may only maintain production levels and refresh the portfolio with more economic opportunities. Deferring or impeding exploration can quickly translate to a substantial decline in gas production, increased production costs, decreased state and federal royalties, and other revenues<sup>24</sup>, as well as market supply shortages.

<sup>15</sup> For example – Courier-Mail, '[Senex application to fast-track Qld gas field developments rejected](#)', 22 August 2023

<sup>16</sup> For example – AFR, '[Santos, NSW government point fingers over Narrabri go-slow](#)', 7 November 2022

<sup>17</sup> For example – Premier of Victoria, '[Enshrining Victoria's Ban On Fracking Forever](#)', 5 March 2021

<sup>18</sup> For example – EDO, '[We're going to court challenging Blue Energy's Bowen Basin gas project](#)', 15 August 2023

<sup>19</sup> For example – Mineral Resources, '[Second significant natural gas discovery in onshore Perth Basin](#)', 20 June 2023

<sup>20</sup> Elixir Energy, '[Contingent Resources increased by 328%](#)', 29 May 2024

<sup>21</sup> Australian Government, '[Finalisation of offshore exploration rounds](#)', 23 July 2024

<sup>22</sup> Shell, '[Annual Report and Accounts 2022: Upstream](#)', accessed 26 February 2024

<sup>23</sup> ExxonMobil, '[ExxonMobil announces full-year 2022 results](#)', 31 January 2023

<sup>24</sup> AEP, '[Future Gas Strategy: consultation paper](#)', 27 November 2023





EnergyQuest's Ongoing Investment Case forecast for the east and west coast markets indicate domestic supply shortages in the coming decade. Ongoing and increased exploration has a role to play in meeting future supply shortfalls.

## Modelling assumptions

### Supply cases

#### Ongoing Investment Case

The Ongoing Investment Case for the east coast includes supply from existing projects that would require ongoing investment to realise, and production from projects that have not been sanctioned.

On the east coast the Ongoing Investment Case includes the Narrabri project in NSW, production from the Beetaloo sub-Basin in the NT, the Mahalo project in Queensland and others. On the west coast the Ongoing Investment includes new development in the Perth Basin and the offshore Browse project amongst others.

The Ongoing Investment Case assumes political support for ongoing natural gas production and favourable investment conditions.

#### Investment Ban

The Investment Ban supply case models an immediate ban on the construction of new gas infrastructure.

The Investment Ban supply case means:

- No contingent resources are developed.
- LNG regasification terminals are not developed.
- Pipelines are not expanded.
- Projects under construction are halted.
- All CSG drilling is halted.

#### *Projects under construction are halted*

An immediate ban on the construction of new gas infrastructure assumes projects under construction but not operating to halt. This would mean new supply from the Atlas project in Queensland and Scarborough project in WA would not come online.

#### *All CSG drilling is halted*

Unlike conventional gas production CSG requires ongoing drilling to maintain production levels. The Queensland LNG projects expend approximately \$1 billion per year to maintain supply for LNG and domestic purposes.

A ban on new infrastructure would mean no new wells could be drilled and CSG production in Queensland would decline. We have assumed a 10% per year decline in CSG production to model the impact of banning CSG drilling.

## Prioritisation of demand

This study assumes that available supply will be prioritised to meet demand in the following order, with the highest priority demand listed first:

- Residential and Commercial
- Industrial



- GPG
- LNG feedstock

LNG feedstock is assumed to be curtailed first due to the operation of the Australian Domestic Gas Supply Mechanism (**ADGSM**) which is designed to prioritise domestic demand over LNG exports when a shortfall is declared. The Investment Ban results in material domestic shortfalls and we have assumed activation of the ADGSM. This report does not explore the trading or reputation damage to other sectors from such a decision.

GPG is assumed to be curtailed second as GPG can be replaced relatively easily, albeit with the higher emissions options of DPG and CPG.

Industrial demand is assumed to be curtailed third and residential and commercial demand fourth as existing practice by regulators is to prioritise supply to small gas users over large gas users when there are shortfalls.

## Northern Territory

We have excluded the NT from our assessment of the impact of an investment ban on supply on the basis that the NT has low domestic demand which can be entirely satisfied by LNG projects that are already in operation (Ichthys).

A ban is therefore not expected to result in unmet domestic demand in NT, and capacity limitations in the pipeline network connecting the NT to Queensland mean that the NT could not play a significant role in meeting Queensland and Southern Region demand shortfalls. Development of the new supply from the Beetaloo Sub Basin would also not proceed under an investment ban.

## Western Australia

There is capacity for WA gas producers to significantly increase domestic supply using existing infrastructure. In particular, the KGP supplies approximately 200-300 TJ/d to the domestic market but has capacity to supply 630 TJ/d.<sup>25</sup> The NWS has historically been the source of supply to the KGP and is currently scheduled to cease production in 2031.

For the Investment Ban scenario in WA we have assumed:

- While the NWS continues to produce the KGP increases domestic supply to meet shortfalls using gas that would otherwise be exported as LNG.
- NWS Extension Plans are discontinued along with the development of the Browse project.
- Domestic production at the Wheatstone and Gorgon LNG projects continues to run at or close to capacity.
- Scarborough domestic gas infrastructure, which is currently under construction, would be stopped under the Investment Ban case and therefore not reach production.
- Domestic supply from the Pluto project remains at current levels as increased domestic supply from Pluto would require investment in additional gas processing infrastructure.

## East coast results

### Ongoing Investment Case

EnergyQuest's east coast Ongoing Investment Case in this report includes supply from existing projects that would require ongoing investment to realise, and production from projects that have not

<sup>25</sup> AEMO, '[WA Gas Bulletin Board](#)', accessed 4 July 2024

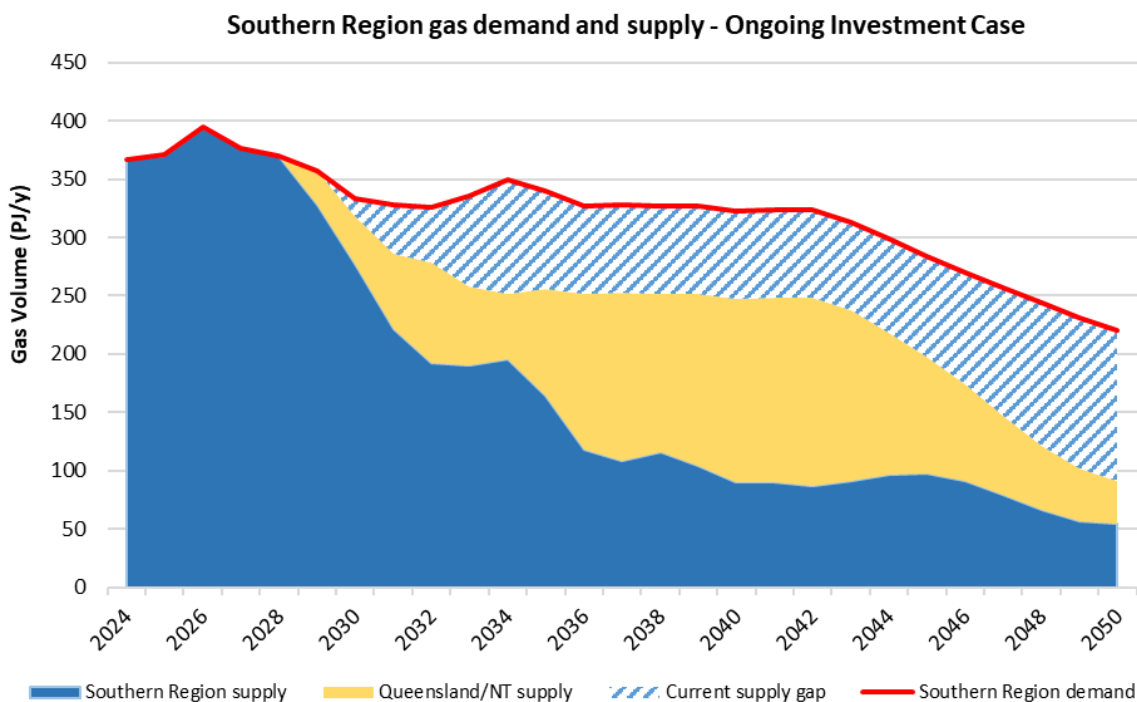


been sanctioned. The Ongoing Investment Case indicates the potential supply that could be brought forward with a strengthening of political support for gas development and improved investment conditions.

Under the Ongoing Investment scenario potential shortfalls arise from 2029 despite significant supply from Queensland. With the right policies and market conditions in place, all demand could be met through yet to be developed supply which may include LNG regassification terminals and/or development of possible, prospective, and contingent resources.

EnergyQuest's Ongoing Investment supply forecast for the Southern Region is shown with demand in Figure 9.

**Figure 9 Southern Region domestic gas demand and supply – Ongoing Investment Case**

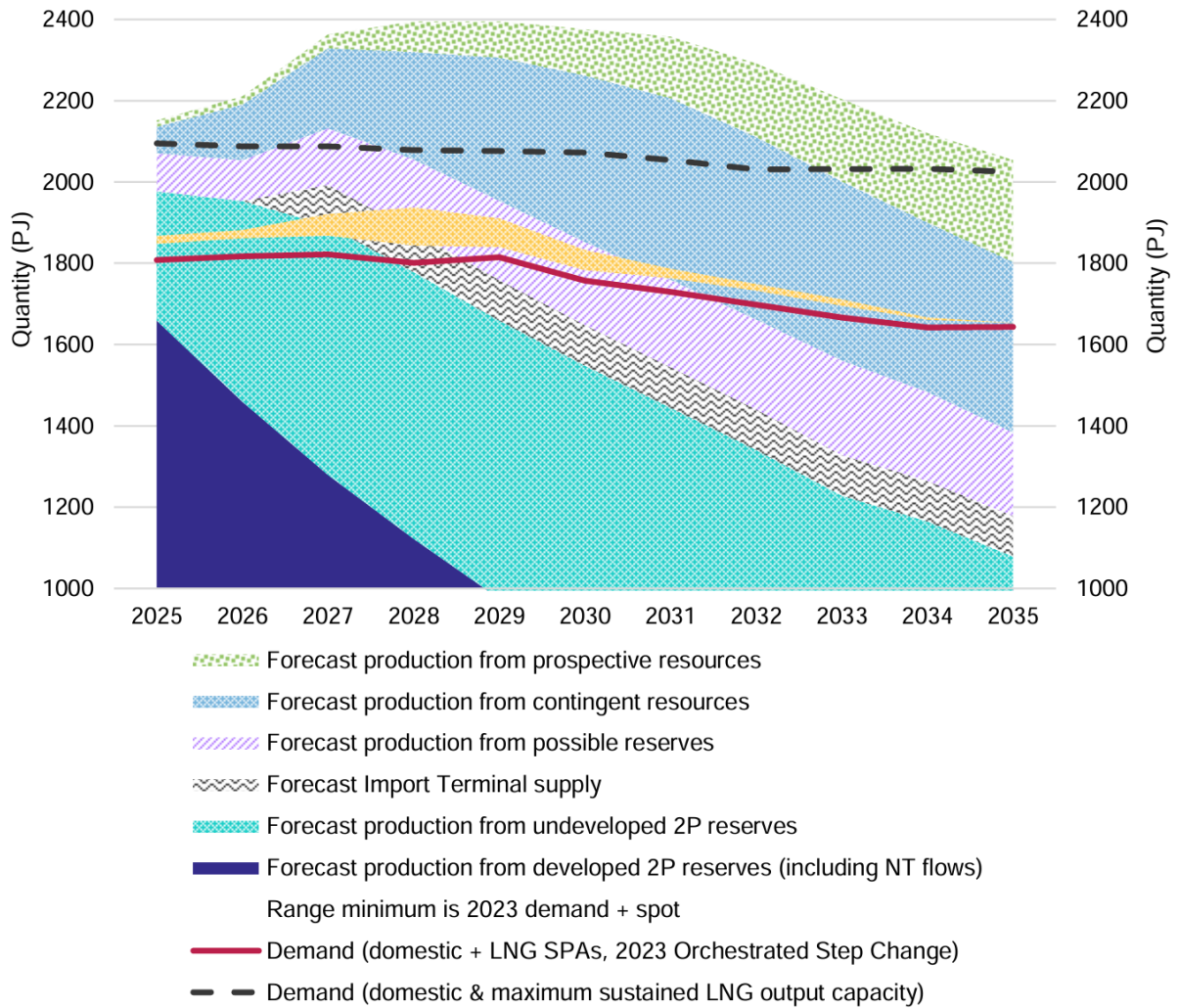


Source: EnergyQuest analysis

We note this forecast assumes additional gas will be available from Queensland to supply the Southern Region at levels that may impact LNG supply contracts if new supply is not brought online at the pace required. This scenario depends on the ongoing development of the CSG fields, which may be impacted by the diversion of LNG feedstock gas south from the LNG projects. There is a risk in this scenario that the CSG drilling programs have constrained drilling capital allocated from the budgets of the LNG projects, given the investment case to drill wells will be undermined once long-term LNG contracts are broken.

The development of possible, contingent, or prospective resources and/or LNG regasification terminals could address the supply gap without interrupting LNG contracts. Development of such resources would require high and consistent levels of political support and significant investment, however estimates from AEMO for the ACCC indicate considerable potential supply (Figure 10).

**Figure 10 Potential for other supply sources to meet unfulfilled demand in the east coast, 2025-35**

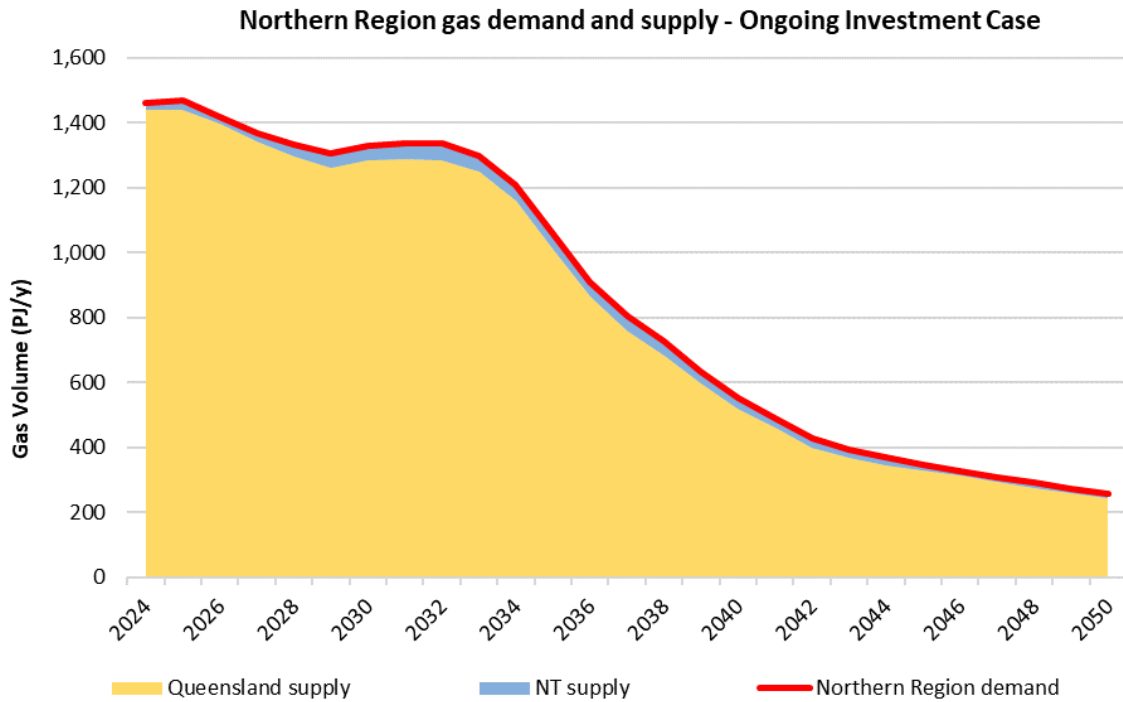


Source: ACCC<sup>26</sup>

EnergyQuest's Ongoing Investment supply with demand for the Northern Region is shown in Figure 11.

<sup>26</sup> ACCC, '[Gas inquiry December 2023 interim report](#)', 15 December 2023

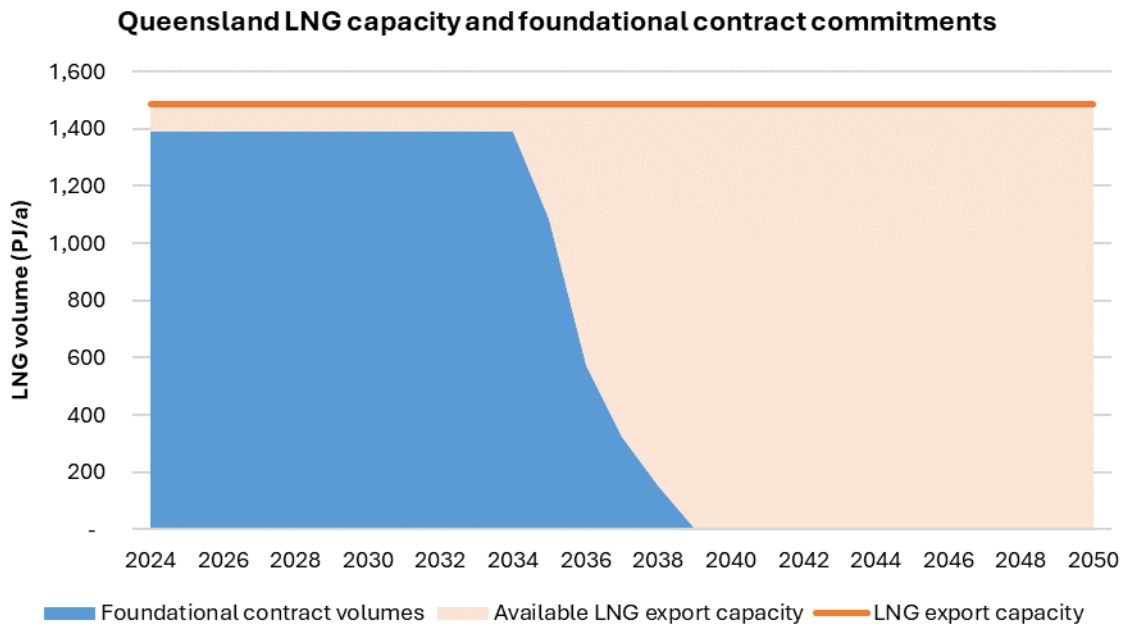
**Figure 11 Northern Region gas demand and supply – Ongoing Investment Case**



Source: EnergyQuest analysis

Figure 12 shows available LNG capacity at the Queensland LNG projects against foundational contract volumes. If feedstock gas is available, the available LNG capacity could be converted into LNG exports totalling 22,669 PJ to 2050.

**Figure 12 Queensland LNG capacity and foundational contract commitments**



Source: Company announcements, EnergyQuest analysis



## Investment Ban

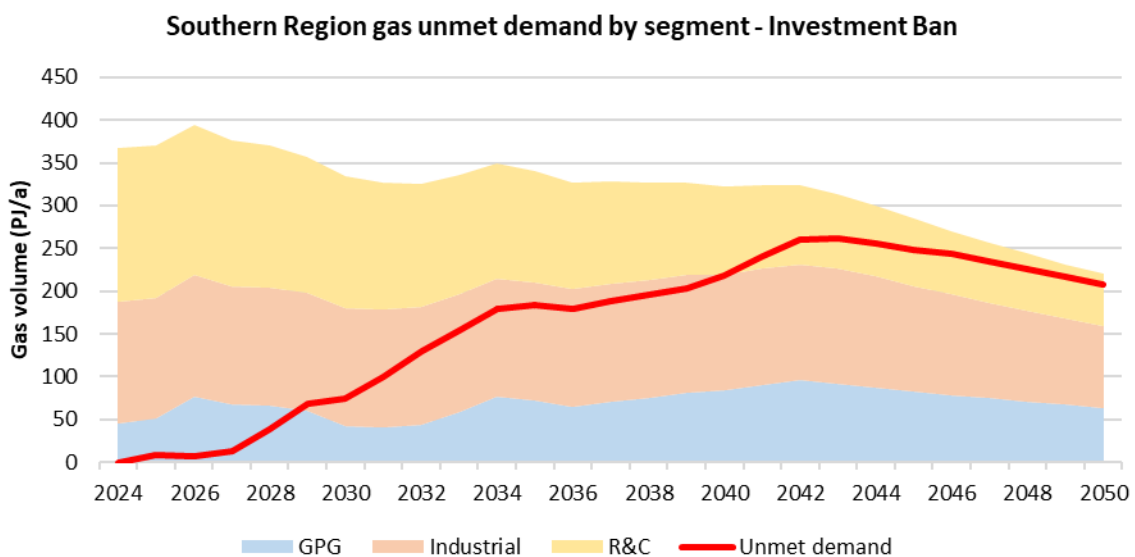
If all investment in new gas infrastructure is banned, by 2029 there would be no gas left for GPG in the Southern Region on an annual basis (unmet peak demand would likely come sooner) and industrial demand load shedding would commence.

By 2030, 24% of industrial demand goes unmet rising to 81% by 2035, and no gas would be available for Southern Region industrial purposes by 2040.

From 2040 there would be curtailment for residential and commercial users and by 2050 80% of residential and commercial demand would be unmet.

Southern Region unmet demand by segment under the Investment Ban case is shown in Figure 13.

**Figure 13 Southern Region unmet gas demand by segment – Investment Ban**

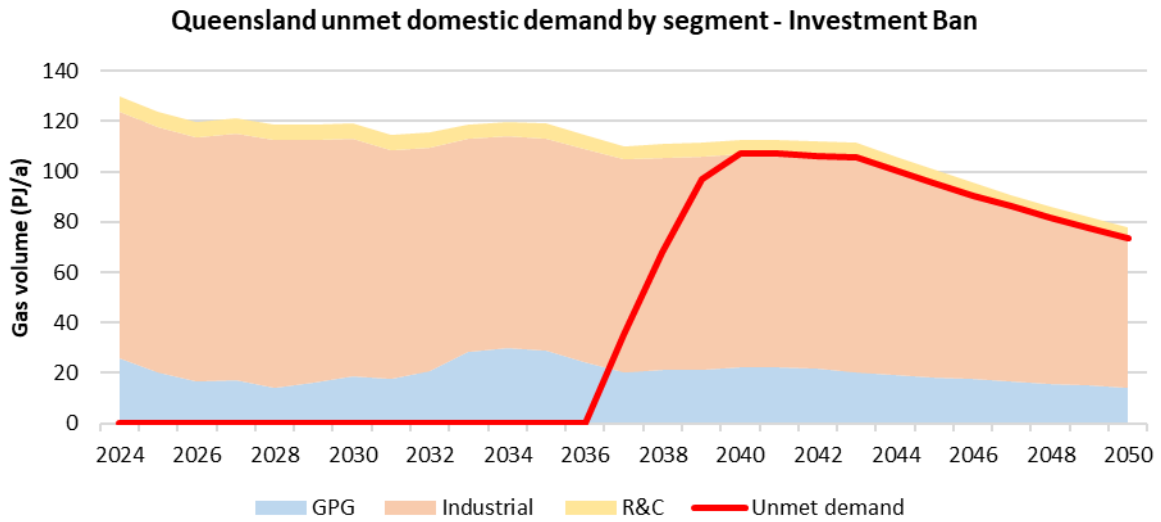


Source: EnergyQuest analysis

Queensland domestic demand continues to be met until 2037 under the Investment Ban with supply from residual investment, and due to limited pipeline capacity running south. From 2037 gas is diverted from Queensland GPG and industrial purposes to avoid Southern Region residential and commercial shortfalls but available supply is depleted by 2040, leaving only enough gas to meet Queensland residential and commercial demand and part of Southern Region residential commercial demand. This outcome may also necessitate changes to the configuration of the pipeline network due to lower volume.

Queensland unmet domestic demand by segment under the Investment Ban case is shown in Figure 14.

**Figure 14 Queensland unmet domestic demand by segment – Investment Ban**

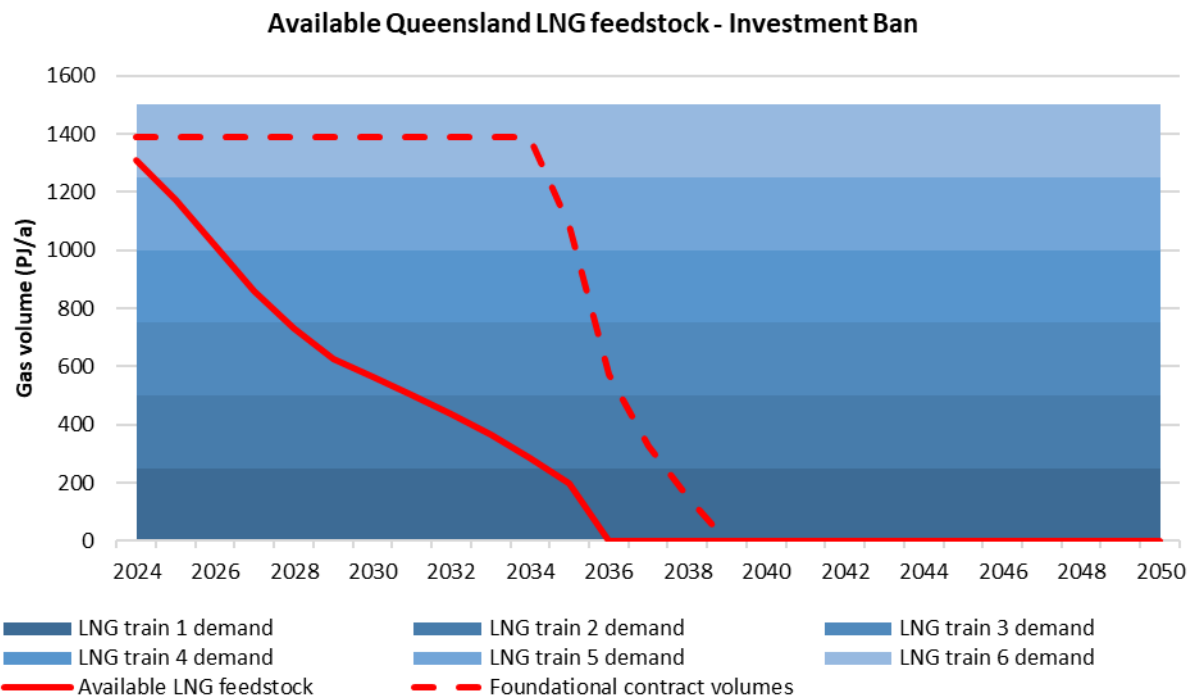


Source: EnergyQuest analysis

Queensland LNG feedstock rapidly depletes under the Investment Ban supply case. One LNG train would be shut down within a year, two LNG trains by 2027, and three LNG trains by 2028. Four LNG trains would be shut by 2031, five by 2035, and there would be no remaining LNG feedstock by 2036.

Available Queensland LNG feedstock under an Investment Ban is shown in Figure 15. As shown in Figure 15 an investment ban would result in foundational LNG contracts being broken within a year with most remaining contracted supply not being fulfilled. Such an outcome would likely cause significant harm to Australia’s trading relationships and reduce the appetite for future foreign investment in Australia.

**Figure 15 Available Queensland LNG feedstock - Investment Ban**



Source: EnergyQuest analysis

## West coast results

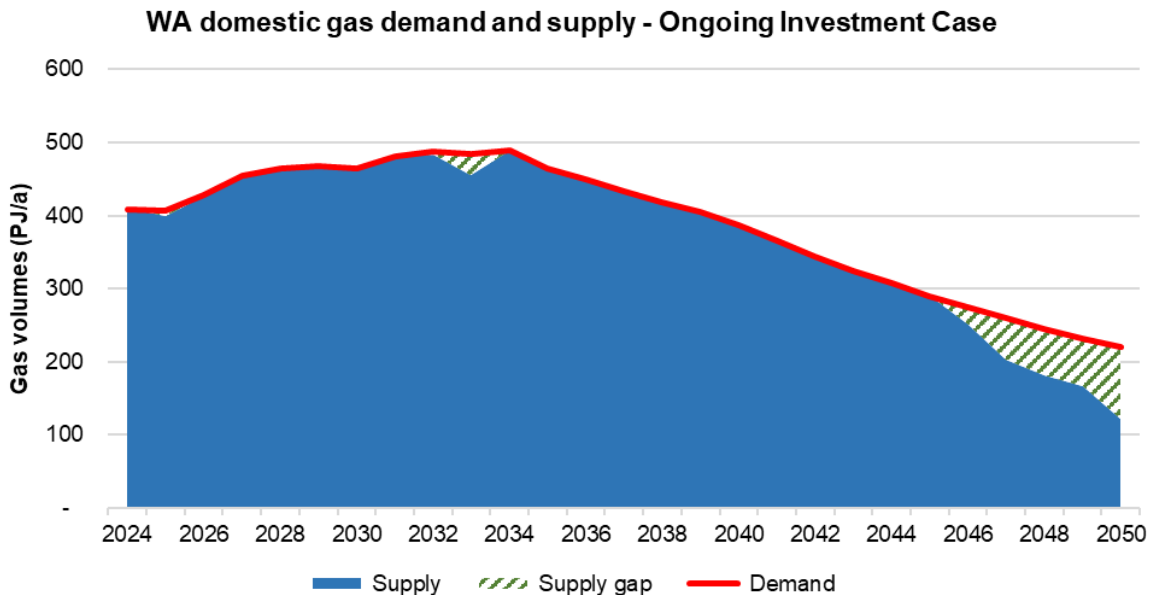
### Ongoing Investment Case

EnergyQuest’s west coast Ongoing Investment supply case includes all potential new gas supply projects including new developments in the Perth Basin and the Browse LNG project from 2034. The scenario represents the potential supply that could be brought forward with a strengthening of political support for gas development and improved investment conditions.

The west coast Ongoing Investment Case indicates a minor shortfall in 2025 and a small supply shortfall in the early 2030s, but WA domestic demand would otherwise be met until the late 2040s. Development of possible, contingent, and prospective resources through ongoing exploration would add to available supply.

EnergyQuest’s Ongoing Investment Case supply forecast for WA is shown with demand in Figure 16. Demand is based on AEMO forecasts adjusted for recent developments (eg the closure of Alcoa’s Kwinana refinery), and EnergyQuest’s assessment of long-term demand.

**Figure 16 WA domestic gas demand and supply – Ongoing Investment Case**



Source: EnergyQuest analysis

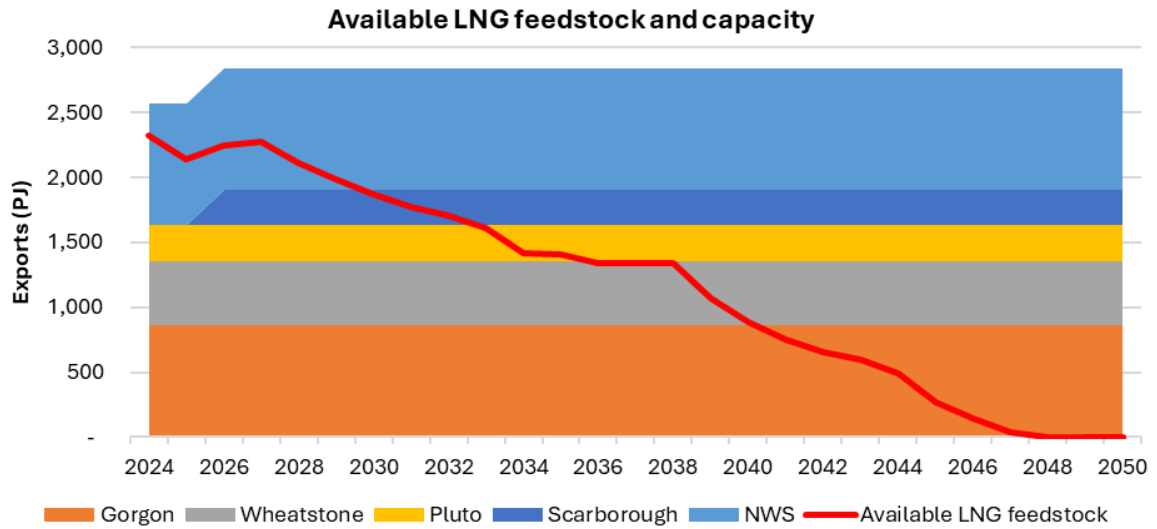
### WA LNG exports

Available feedstock for WA LNG projects is shown in Figure 17.

Figure 17 is based on existing reserves which may be added to through further exploration and development. For example, the Gorgon Joint Venture recently applied for approval to drill two exploration wells that, if successful, could add to reserves<sup>27</sup> and the Browse LNG project, if sanctioned and approved, would also add to reserves. Figure 17 also assumes existing LNG export capacity is maintained to 2050.

<sup>27</sup> ENG, [‘Chevron looks for more gas in Carnarvon Basin’](#), 5 June 2024

**Figure 17 Available LNG feedstock and capacity**



Source: EnergyQuest

## Investment Ban

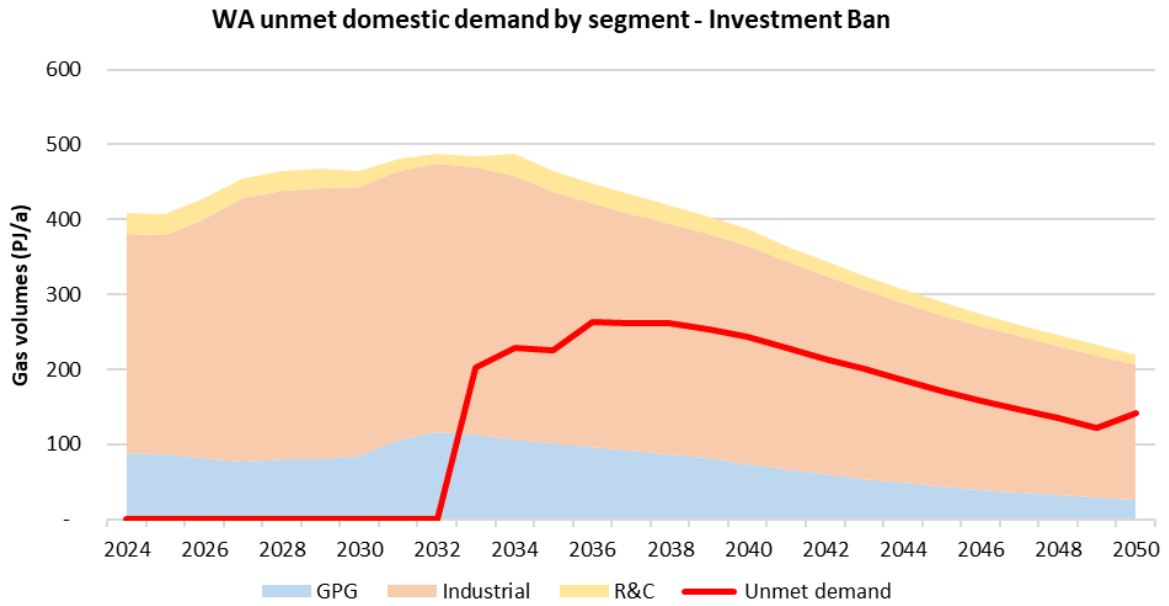
An Investment Ban would include an immediate ban on the construction of new gas infrastructure, including preventing the Scarborough LNG project from reaching production.

A key difference between east and west coast outcomes is that in WA the KGP is the only domestic gas plant that could increase supply. The Gorgon and Wheatstone LNG projects also supply significant domestic volumes but are essentially running at capacity and therefore could not divert LNG volumes to increase domestic supply without additional investment, which would not occur under an investment ban. An investment ban would also likely rule out increased supply from the Pluto LNG project as the infrastructure to enable increased supply from the expanded Scarborough/Pluto projects would not be completed.

Once supply from the NWS via the KGP ceases from 2032, constraints in domestic gas processing capacity would mean there would be no gas available for GPG and industrial load shedding would commence, and by 2036 50% of industrial demand would go unmet. Residential and commercial use would be unaffected.

West coast unmet demand by segment under the Investment Ban case is shown in Figure 18.

**Figure 18 WA unmet domestic demand by segment – Investment Ban**

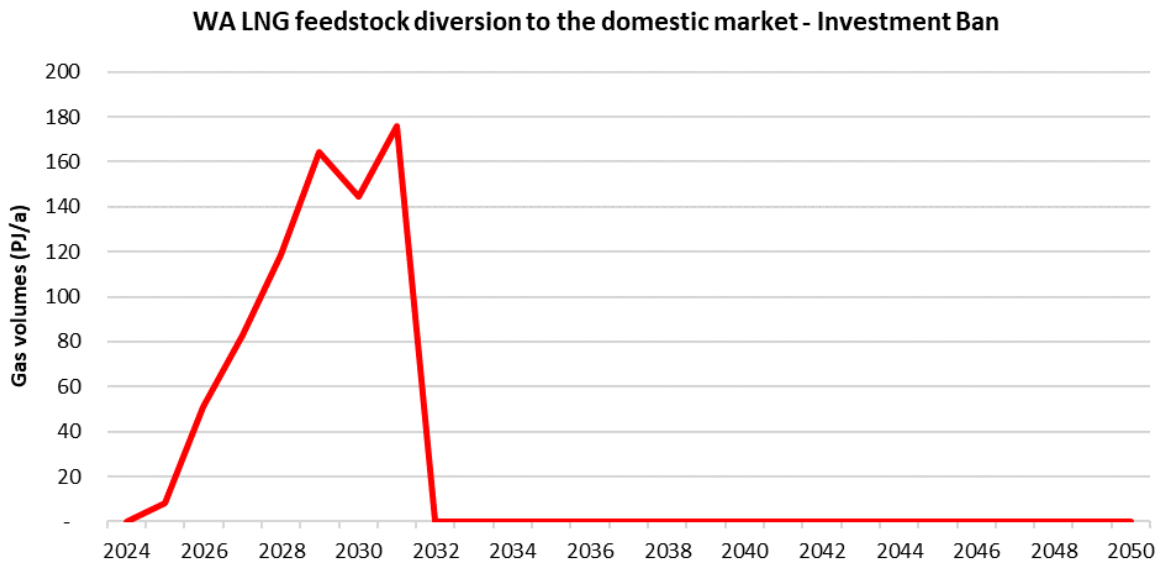


Source: EnergyQuest analysis

Under the Investment Ban supply case more LNG feedstock is diverted to the KGP until closure in 2031. The diverted volumes would result in the KGP running close to capacity from 2029-2031.

The reduction in available WA LNG feedstock under the Investment Ban supply case is shown in Figure 19.

**Figure 19 WA LNG feedstock diversion to the domestic market – Investment Ban**



Source: EnergyQuest analysis





E N E R G Y Q U E S T

## About EnergyQuest

EnergyQuest is an Australian-based energy advisory firm, which specialises in independent energy market analysis and strategy for energy companies, energy buyers, investors and governments. It is a source of informed comment on energy trends affecting Australia and the region.

### **Our history...**

EnergyQuest was established by Graeme and Susan Bethune in 2005 to provide strategic analysis on Australian oil, gas and other energy sources. It produces regular multi-client reports and undertakes specific consulting assignments.

EnergyQuest produces the flagship EnergyQuarterly, which for 19 years has been the authoritative source of data and analysis of oil and gas demand, production, reserves, development projects, gas contracts and prices in Australia.

### **What we do...**

Our work covers analysis and advice on oil, gas, power, LNG, renewable energy, pipelines, and transport fuels. We provide market insights through our EnergyQuarterly report, multi-client reports and consulting services.

We are passionate about providing our clients with accurate data and independent, rigorous analysis so they can confidently navigate the rapidly changing energy markets.

### **Our unique approach...**

More than just analysis, EnergyQuest's team has over 200 years of first-hand experience in the energy industry. We understand how markets develop, and the competitive opportunities and options which present themselves in a real marketplace.

We use proprietary analysis of subsurface petroleum systems to establish the inherent risks, and energy supply scenarios in meeting market demand.

EnergyQuest tracks contracting positions, and demand for each of the key markets.

Our EnergyQuarterly is the most in-depth and widely read quarterly report of the Australian oil and gas industry. This ensures our data and analysis is always current and tested over time.

### **Our capabilities...**

We provide a wide range of services for our clients which include business intelligence based on our extensive data bases and industry fact gathering, and bespoke energy advice.

#### *Business intelligence*

EnergyQuest produces a number of multi-client and subscription reports on energy including Australian oil, gas and transport fuel.

Multi-client reports are a cost effective and timely way to address current issues in the industry. EnergyQuest has recently released a suite of important multi-client reports, including the annual [East Coast Gas Outlook](#), and the [West Coast Gas Outlook](#).

EnergyQuest has produced its flagship [EnergyQuarterly](#) since 2005. It is Australia's most widely read and comprehensive quarterly review of the Australian oil and gas industry. It provides comprehensive and timely statistical analysis of oil and gas production, reserves, development projects, gas contracts and prices in Australia.

EnergyQuest also produces [Australian LNG Monthly](#) which provides analysis and data on Australian LNG exports, major LNG markets and the interface between LNG exports and domestic gas markets



## E N E R G Y Q U E S T

### *Energy advice*

The energy market is rapidly changing, and clients need to make important decisions in this new environment. EnergyQuest can help work through client issues, refocus strategies and show how to build business resilience for the future.

EnergyQuest provides energy advice to a range of major Australian and international energy companies, energy buyers, investors and governments.

Assignments have spanned upstream and downstream energy types, including oil, gas, coal, coal seam methane, oil shale, biofuels, electricity and diesel; and a range of issues such as demand and supply, petroleum reserves and production, infrastructure and prices.

### **EnergyQuest Team**

- **Dr Graeme Bethune**, Chairman, founder of EnergyQuest. Over 20 years' experience in oil, gas and energy. Described by Upstream as the statistics guru of the Australian oil and gas industry.
- **Rick Wilkinson**, Chief Executive Officer, more than 35 years of experience in the oil and gas industry including senior positions in project management, commercial negotiation, LNG contracting, gas wholesaling and retailing, and technical field engineering.
- **Susan Bethune**, co-founder, Head of Research, specialist in economic, financial and statistical analysis.
- **Mathew Paull**, after 13 years with AEP (formerly APPEA), brings his deep knowledge of regulatory and government affairs to EnergyQuest.
- **Bruce Holland** adds his practical experience in the electricity industry. Bruce spent many years helping clients navigate buying electricity and managing the associated business risks.
- **Marie-louise Lees**, Senior Associate, a petroleum engineer with more than 30 years' experience in upstream oil and gas in a range of process, production and reservoir engineering roles.
- **David Upton**, researcher and writer with deep knowledge of the resources and energy industries. Geology graduate and author of the well-known mining and exploration history, *The Olympic Dam Story*.
- **Adam Roberts**, Senior Analyst, is an economist and data analyst with over 20 years' experience, including consulting in the mining, electricity generation, and heavy equipment sectors.



## EnergyQuest standard terms and conditions

Edition: 1 November 2023

EnergyQuest Pty Ltd (**EQ**)

ACN139 665 295 | ABN 89 139 665 295

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Email: [rwilkinson@energyquest.com.au](mailto:rwilkinson@energyquest.com.au)

Website: [www.energyquest.com.au](http://www.energyquest.com.au)

### About these terms

1. The Client acknowledges having had fair opportunity to read, understand and negotiate with EQ regarding these terms.
2. Subject to any special written offer by EQ or as otherwise agreed by EQ in writing, these terms form part of each contract for EQ to supply to the Client:
  - 2.1 a Multi-Client Report (or "**MCR**") – being a publication of EQ not commissioned by a particular Client (such as EnergyQuarterly, Australian LNG Monthly report, East Coast Gas Outlook) supplied at the frequency they are produced (as specified for the particular MCR on the Website) upon payment by the Client of a subscription fee; or
  - 2.2 an Independent Consultancy Report (or "**ICR**") – being a single, or series of, written reports or recommendations, or presentations (oral and/or visual), by EQ commissioned by a particular Client supplied in accordance the terms of engagement agreed between EQ and the Client (**Consultancy Contract**).
3. In these terms the term "**Report**" means MCR and ICR collectively or any one of them as the context requires.
4. The Client is deemed to have accepted these terms, if after receipt of a copy of these terms or after being able to access these terms on EQ's website, the Client places an order for, or commissions (as the case may be) a Report. The Client's failure to acknowledge these terms is not evidence these terms do not apply. These terms negate any terms the Client may issue.
5. EQ may at any time change these terms by notifying the Client or by issuing an alert on EQ's website. Any such change applies to any contract for a Report that is completed and supplied to the Client two (2) or more days after the change was so notified or the alert was issued.

### Multi-Client Reports

6. Upon EQ receiving the relevant subscription payment from the Client in full clear funds, the MCR subscribed to will be delivered electronically to the Client's email address nominated in the subscription application, and at the frequency specified for the particular MCR on the Website.
7. The Client acknowledges that an MCR is necessarily of a general nature, does not constitute advice based on the particular circumstances of the Client and must not be relied on in making decisions in the Client's enterprise.
8. EQ reserves the right to suspend or terminate a subscription without giving reasons, subject to EQ refunding to the Client any prorated subscription fee paid to EQ in advance.

### Independent Consultancy Reports



## E N E R G Y Q U E S T

9. A Consultancy Contract only forms when EQ either agrees in writing (including by email exchange) to the engagement or commences work for that Client on the ICR.
10. A Consultancy Contract is comprised of these terms as read with and subject to the 'brief' (scope of work, timetable and other particulars) as last issued by the Client before the Consultancy Contract formed. The brief may not change thereafter except with EQ's consent. Consent may be conditional, such as a revision of the fee to be paid to EQ. If the brief changes, these terms also apply to the brief as changed. A Consultancy Contract may only be modified or cancelled as the parties agree in writing (includes by email exchange).
11. Any promotional materials EQ publishes only give a general idea of its services on offer and cannot be relied on for any other purpose.
12. If in the preparation of an ICR:
  - 12.1 EQ reasonably requires from the Client any direction, information or access to the Client's staff or records or premises, the Client must provide that input promptly and without charge;
  - 12.2 EQ acts on a direction given by the Client, that action is wholly at the Client's risk; or
  - 12.3 EQ uses information sourced from the Client or from a third party believed by EQ to be reputable, EQ may rely on that information without enquiry and the use of that information is wholly at the Client's risk.
13. For the purposes of paragraph 9, where the Client is the source of such information (Client Information), the Client warrants it has right to disclose the Client Information to EQ and that it does not infringe any third party's rights or applicable law.
14. EQ acknowledges that it remains liable for the due performance of the Consultancy Contract notwithstanding EQ may use subcontractors in the preparation of the ICR.
15. EQ must immediately notify the Client if EQ becomes aware of EQ having a conflict of interest, or a significant risk of a conflict, in performance of the Consultancy Contract. If EQ has a conflict of interest that cannot be managed to the Client's satisfaction, the Client may terminate the Consultancy Contract without penalty.
16. Unless otherwise specified in the EQ quotation or subsequently as agreed in writing (including by email exchange), EQ will issue a tax invoice for a ICR for payment by the Client in AUD within 30 days after completion of the ICR by electronic transfer in clear funds to a bank account nominated by EQ on the tax invoice. However, if the scope of work for the ICR is for a series of written reports, recommendations and/or presentations, EQ may issue interim tax invoices monthly with a final tax invoice to follow after completion of the ICR.
17. In addition to the fee referred to in paragraph 16, EQ may recover from the Client an amount equal to the GST for which EQ becomes liable by the Consultancy Contract being a taxable supply to the Client, conditional upon EQ issuing a tax invoice for that payment.
18. EQ may not claim against the Client for any cost or expense (other than GST) EQ incurs in a Consultancy Contract as an addition to its fee except to the extent provided for in the Consultancy Contract or approved in writing by the Client.
19. The Client must not deduct from EQ's invoice/s any set off, counterclaim or rebates asserted by the Client or other sum (such as taxes, charges etc).
20. If payment of EQ's invoice is late, then in addition to its other rights and remedies EQ may recover from the Client daily interest charged at the rate of 12% per annum on the unpaid amount calculated from the date the payment was due. Interest not paid for 30 days adds to the debt (is capitalised), and thereafter attracts interest.



## E N E R G Y Q U E S T

21. A party to a Consultancy Contract must not at any time make improper use or disclosure of any information about the affairs of the other party or any information the use or disclosure of which information is regulated by the Privacy Act 1988, or the Australian Privacy Principles obtained in negotiations for, or in performance of, the Consultancy Contract. The fact and terms of the Consultancy Contract are information to which the above applies to the benefit of all parties jointly. To obtain a copy of EQ's Privacy Policy, contact EQ.
22. Subject to paragraph 15 (conflict of interest) and paragraph 21 (confidentiality), a Consultancy does not prevent EQ from consulting to any third party, such as a competitor of the original Client.
23. As a continuing obligation (including after the Consultancy Contract terminates) the Client indemnifies and holds harmless EQ against any claim for any loss, damage, personal injury or death to the extent caused by the Client's improper distribution, sharing or use of a deliverable.
24. EQ accepts no liability to anyone other than the Client. The Client may not assign or declare a trust of a Consultancy Contract or the benefit of a service in the Consultancy Contract without EQ's prior written consent.
25. If in a Consultancy Contract, the Client is more than one (1) person, that contract binds each such person jointly and severally, and each of them is taken to have authority to bind the other/s in connection with the contract, including that a notice to / from any such person is notice to / from all of them. If the Client nominates a third party as the recipient of service in the Consultancy Contract or as the addressee of an invoice for the Consultancy Contract, the initial Client remains liable.
26. A party is not liable for a failure to perform a Consultancy Contract to the extent its performance is prevented by a circumstance not within that party's reasonable control and without its negligence.
27. Any provision of a Consultancy Contract that is unenforceable at law must be read down to the extent necessary to avoid that result, or if it cannot be read down it must be severed without affecting the validity and enforceability of the remainder of the contract.
28. A Consultancy Contract constitutes the parties as independent contractors and not as partners, joint venturers, principal and agent, or trustee and beneficiary for any purpose.

### **General terms**

29. Where the Client elects to pay for a Report by providing the Client's credit card details, by providing that information, the Client irrevocably authorises and directs EQ to process the credit card payment through its merchant facility for the full amount of the relevant annual subscription or the fees payable pursuant to a Consultancy Agreement, as the case may be, (including GST), plus a surcharge of up to 1.5% to cover applicable bank, administration and processing fees.
30. EQ is not competent or licensed to provide financial services advice (such as whether to acquire, hold, vary or dispose of an investment), taxation advice, legal advice, valuation advice, engineering or technical advice, and if the Client has need of that advice they should always seek it from an appropriately qualified professional.
31. The Client acknowledges that EQ almost exclusively conducts the work for the preparation of Reports through the use of subcontractors.
32. EQ must use reasonable care in carrying out a Consultancy. Otherwise, EQ does not give any other warranty, condition or guarantee in connection with the conduct of the Consultancy unless required by law (for example, Australian Consumer Law).
33. The Client agrees that EQ'S total liability in respect of any claim pertaining to:
  - 33.1 a Consultancy Contract shall not exceed, in monetary terms, three times the quantum of EQ's fee (excluding GST) for its performance of the Consultancy Contract; and



## E N E R G Y Q U E S T

- 33.2 any MCR delivered to the Client shall not exceed, in monetary terms, three times the quantum of the subscription fee (excluding GST) for the delivery of the MCR.
34. The Client acknowledges and agrees, regardless of whether EQ issues an oral or written Report, that:
- 34.1 any historical information in the Report is not necessarily an indicator of future performance;
- 34.2 any estimate, projection or forecast in the Report would be based on various assumptions (which might not be stated) and on subjective beliefs, opinions and estimates of EQ as of the date the supply of the Report;
- 34.3 EQ is not obliged to update any forward-looking information as above if those beliefs, opinions or estimates should change or to reflect other future developments;
- 34.4 the Report is confidential to EQ and the Client must not, without EQ's written approval:
- (a) allow any person (individuals, consultants, investors, joint venture partners, corporations or government body) outside the Client's enterprise to access the Report (or extract from it); or
- (b) cite or reference the Report in any material published externally by the Client;
- 34.5 unless otherwise stated, the Report (including all text, images, tables, calculations, models, graphics and Intellectual Property) is the copyright of EQ and at all times remains the property of EQ; and
- 34.6 the Client has a non-exclusive, non-assignable, irrevocable licence to use and reproduce the Report for, and only for, the Client's enterprise, conditional upon the Client having paid EQ in full for the Report.
35. The parties agree that:
- 35.1 they shall not commit, authorise or permit any action which would cause the parties and affiliates to be in violation of any applicable anti-bribery laws or regulations;
- 35.2 this obligation applies in particular to illegal payments to government officials, representatives of public authorities or their associates, families or close friends;
- 35.3 it will never offer or give, or agree to give, to any employee, representative or third party acting on the parties behalf nor accept, or agree to accept from any employee, representative or third party acting on the parties behalf, any gift or benefit, be it monetary or otherwise, that could breach any law or policy applicable to the parties; and
- 35.4 if a party
- (a) becomes aware;
- (b) has reason to believe; or
- (c) has any specific suspicion,
- that there has been or will be a breach or corruption involved with regard to the negotiation, conclusion or performance of any contract for EQ to supply to the Client a Report, it will notify the other party immediately.
36. EQ must ensure that it will comply with all applicable laws pertaining to modern slavery which is deemed to include forced labour, human trafficking and child labour and take appropriate steps to meet international standards around modern slavery where these set a higher standard than domestic law.
37. EQ acknowledges and agrees that in relation to any contract for EQ to supply to the Client a Report, it will comply with all laws relating to the privacy and management of personal information and data protection, including the Privacy Act 1988 (Cth) and any applicable legislation with similar objectives.





38. The laws in Queensland govern these terms and a Consultancy Contract, and EQ has exclusive right to nominate the court in which any legal action is to be commenced and conducted. The parties submit irrevocably to the jurisdiction of those courts, and any courts that have jurisdiction to hear appeals from those courts.
39. These terms may only be amended or supplemented in writing, signed by the parties.