



Australian Government
**Department of Industry, Science,
Energy and Resources**

Supplementary Submission by the Department of Industry, Science, Energy and Resources to the Senate Economics References Committee

Inquiry into Australia's oil and gas reserves

3 September 2021

Overview

The Department of Industry, Science, Energy and Resources (the department) welcomes the opportunity to make a supplementary submission to the Senate Economics Reference Committee inquiry into Australia's oil and gas reserves.

The department's supplementary submission provides updates to economic figures, development of strategic basin plans and departmental policy reviews.

The supplementary submission should be read in conjunction with the previous submission made to the inquiry in December 2019.

Australia's oil and gas industry

Economy and export value

Australia's oil and gas industry is a multi-billion dollar contributor to Australia's prosperity, energy security, employment and terms of trade. Investment of \$323 billion in Australia's oil and gas sector in the last 10 years has fuelled opportunity and growth.¹

In 2020-21, the value of Australian oil and gas exports was around \$41 billion.²

Over 75 per cent of this amount (\$32 billion) was from liquefied natural gas³ (LNG). Over the last decade, there has been significant growth in both the volume and value of Australia's LNG exports (Figure 1). Earnings dipped in 2020-21, due to the impact of the COVID-19 pandemic on oil prices which flowed through to oil-linked LNG contracts. However, Australia's LNG export volume was largely resilient and export earnings for LNG are expected to increase to \$49 billion in 2021-22 as prices recover⁴. The volume of LNG that Australia exports is expected to remain stable in the medium term, as backfill projects are brought online to compensate for depletion in existing fields.

Australia's petroleum product exports were valued at \$9 billion in 2020-21, of which crude and condensate made up around \$7 billion⁵. Earnings from these exports have declined, driven by the impacts of the COVID-19 pandemic. Crude and condensate exports are expected to increase in value above pre-pandemic levels in 2018-19 to over \$10 billion in 2021-22 and 2022-23. The composition of Australia's oil production is changing, with condensate comprising a growing share of production (Figure 2). This reflects increased condensate production from new LNG projects since 2018 and declining production of crude oil as existing basins are depleted. In 2019-20, condensate represented 47 per cent of Australia's total oil production⁶. The presence of condensate in new gas field developments can be an important factor in determining project commerciality by adding an additional income stream to projects.

¹ From June quarter 2011 to March quarter 2021, Resources and Energy Quarterly June 2021, Historical Data, Table 13 Quarterly capital expenditure of private enterprises, Australia

² ABS International Trade Statistics Service cat. no. 5368.0

³ Ibid

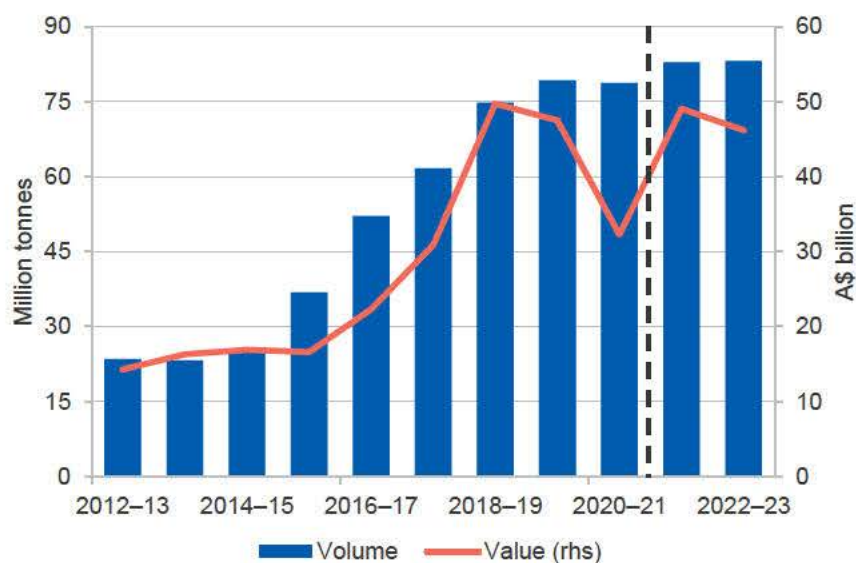
⁴ Resources and Energy Quarterly June 2021

⁵ ABS International Trade Statistics Service cat. no. 5368.0

⁶ Resources and Energy Quarterly June 2021

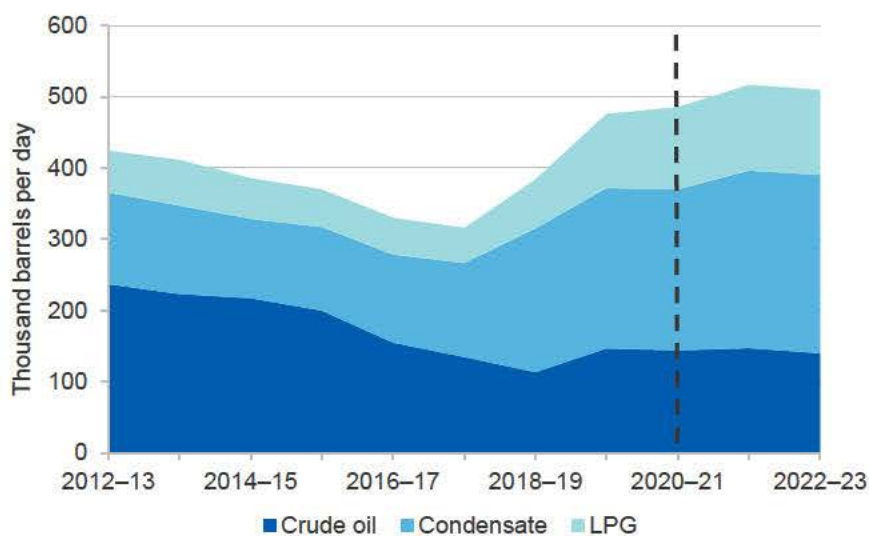
In the 12 months to May 2021, the Oil and Gas Extraction sector directly employed an average of around 23,200 people.⁷ In 2019-20, the industry paid \$3.9 billion to employees of the sector.⁸ The oil and gas industry also paid over \$1 billion in Petroleum Resource Rent Tax in 2019-20.⁹

Figure 1: Australian LNG export volumes and values



Source: ABS (2021) International Trade in Goods and Services, 5368.0; Department of Industry, Science, Energy and Resources (2021)

Figure 2: Composition of Australian oil production



Source: Australian Bureau of Statistics (2021); Department of Industry, Science, Energy and Resources (2021)

⁷ ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, May 2021 – Table 6

⁸ ABS 8155.0 Australian Industry, 2019-20 – Key data by industry subdivision – Table 1

⁹ Australian Government, Final Budget Outcome 2019-20

Energy and investment

Australian oil and gas products play an important role in meeting the energy needs of the domestic market, as well as those of countries in our region. The LNG export industry has driven significant investment in Australia and diversification in our petroleum export products.

Australia is a net importer of oil and net exporter of gas. Australia produced 775 petajoules (PJ) of oil, equivalent to 125 million barrels of oil equivalent (mboe), and 5,498 PJ of gas in the 2018-19 financial year.¹⁰ Tables 1 to 3 provide a summary of Australia's oil and oil product imports and exports over the 2019 to 2021 period. More than 70 per cent of Australia's crude oil and condensate is from Western Australia.¹¹ Most of the State's production is in the Browse, Carnarvon and Perth Basins.

Table 1: 2019 – 2020 -Trade in oil and oil products

	Import volume ^a (ML)	Import value ^b (\$Am)	Export volume ^c (ML)	Export value (\$Am) ^c
Crude oil & other refinery feedstocks	21,744	13,508	14,739	9,071
Liquefied petroleum gas (LPG)	802	301	2,673	1,049
Other Refined product (ex LPG)	35,246	26,098	952	719
TOTAL	57,792	39,907	18,364	10,840

Table 2: 2020 – 2021 - Trade in oil and oil products

	Import volume ^a (ML)	Import value ^b (\$Am)	Export volume ^c (ML)	Export value (\$Am) ^c
Crude oil & other refinery feedstocks	14,199	7,780	15,933	7,723
Liquefied petroleum gas (LPG)	656	260	5,414	2,235
Other Refined product (ex LPG)	35,435	17,467	751	441
TOTAL	50,289	25,507	22,099	10,398

Notes: Tables 1 and 2. **a** Australian Petroleum Statistics **b** Total value sourced from ABS (2021) International Trade in Goods and Services, individual values calculated by the Department of Industry, Science, Energy and Resources **c** ABS (2021) International Trade in Goods and Services, Australia, Cat. No. 5368.0

Table 3: Australian production and consumption of gas, oil and oil products

2018-19	Production		Consumption		Production share of consumption
	PJ	mboe	PJ	mboe	percent
Oil ^a	775	125	2,402	387	32
Gas ^b	5,498	na	1,593	na	345
Crude oil	677	107	1,125	178	60
Petroleum products	1,095	176	2,343	377	47

Notes: **a** includes crude oil production **b** Australia exports most of gas production. Source: Australian Energy Statistics 2020, Table A

¹⁰ Australian Energy Statistics 2020, Table A

¹¹ Department of the Industry, Science, Energy and Resources, Australian Petroleum Statistics June 2021, Table 1BB

As one of the world's largest exporters of LNG, Australia has a reputation as a reliable long-term energy supplier to growing Asian energy markets. This supply is generated by the ten operating LNG projects in Australia – seven supplied by gas from Australia's offshore waters and three supplied by east coast onshore gas. LNG projects in Western Australia and the Northern Territory have 71 per cent of Australia's installed LNG production capacity of 88 million tonnes per year. The three LNG projects in Queensland have 29 per cent of capacity and are supplied primarily by onshore coal seam gas (CSG) fields in Queensland. [Attachment A](#) provides a summary of Australia's LNG facilities, their ownership, development milestones, production capacity and capital investment.

Offshore, the foundation North-West Shelf project has exported LNG for 32 years and provided gas to the domestic Western Australian market for 37 years. It has been followed by six other LNG developments in Western Australia and the Northern Territory. The scale of capital investment required for commercially viable LNG plants has dictated that these projects take joint venture partnerships to support development.

Onshore, the first commercial CSG operation started in 1996. Advances in technology coupled with high growth in gas demand from Asia led to substantial investment in Queensland's CSG industry, focused on LNG exports. Since 2010 this investment has resulted in extensive drilling, primarily in the Surat and Bowen and three east coast LNG facilities are now fully operational. These facilities represent a total investment of over \$70 billion.¹²

Domestically, the Gippsland Basin is the dominant source of offshore gas supply to south east Australia, with about half of total demand for domestic gas supplied through the Longford Gas Plant on the coast of south east Victoria. The second major source of gas supply to south east Australia is the Cooper/Eromanga Basin, extending from north east South Australia across south west Queensland. Gas from this basin is processed at the Moomba Gas Plant located in north east South Australia, which also supplies gas to the Queensland domestic market and to one of the east coast LNG facilities.

Petroleum exploration expenditure (both onshore and offshore) approached \$1.3 billion in the 2019-20 financial year.¹³ Petroleum exploration expenditure from recent quarters suggests that some confidence is returning following the downturn during the COVID-19 pandemic.

LNG Projects and Economic Benefits

Australia's large upcoming offshore gas developments (Barossa, Scarborough and Browse) will support the creation of new jobs, including in the construction and manufacturing sectors. The development of these three projects will require an investment of around \$60 billion.

Sanctioning of the US\$12 billion Scarborough projects and US\$20 billion Browse will develop up to 25 trillion cubic feet of offshore natural gas resources. Western Australian LNG operations will support the regional development of the Burrup and Pilbara regions, supporting the creation of thousands of jobs in the construction sector.

The Gorgon and Wheatstone natural gas projects represent a combined investment by Chevron and partners of nearly US\$100 billion. Since 2018, Chevron has invested an additional \$10 billion into the

¹² <https://www.business.qld.gov.au/industries/invest/mining/resources-potential/petroleum-gas>

¹³ ABS 8412.0 Mineral and Petroleum Expenditure Australia, March 2021

Gorgon project through the Gorgon Stage 2, and Jansz-Io Compression projects. Chevron is expected to invest a further \$50 billion over 30 years into the Australian economy over the lifetimes of its Gorgon and Wheatstone projects. Collectively, the Gorgon and Wheatstone projects have committed more than \$60 billion to the Australian economy, with more than 900 contracts awarded to Australian companies.¹⁴

Darwin is an important gas and LNG hub hosting the US\$45 billion Ichthys LNG Project, the Santos operated Darwin LNG Plant, and is the service and supply centre for the world-first Prelude Floating LNG project in the Timor Sea. The recently sanctioned US\$3.6 billion Barossa project will secure the long-term viability of the Darwin LNG Plant, maintain hundreds of operational jobs¹⁵ and maintain ongoing LNG exports.

The Ichthys LNG project is the single largest investment made by a Japanese company (INPEX) outside of Japan and the only Japanese-operated LNG facility in the world. Analysis by ACIL Allen reported the following economic benefits attributed to construction of the Ichthys project

- INPEX injected more than \$8 billion into the Northern Territory economy.
- More than 1,100 Northern Territory businesses secured work on the Ichthys project.
- At peak construction, it employed over 8,000 workers onsite.
- It is projected to deliver a \$118 billion economic boost for the Northern Territory over the 2012-2050 period.

Future oil and gas projects

Driven by increasing demand from Asian economies, demand for LNG is expected to grow, surpassing 700 million tonnes per year by 2040. As the cleanest and lowest emissions fossil fuels, natural gas is anticipated to support other clean energy and low emissions technologies in a decarbonising world. Gas-to-hydrogen projects, integrated with Carbon Capture Use and Storage (CCUS) have the potential to supply international 'blue hydrogen' markets and may represent a significant source of demand for natural gas in the future.

The Australian Government is focused on reducing the costs of CCUS, both through process improvements and through generating value from captured CO₂. Since 2008, the Australian Government has committed over \$790 million to support research, development and demonstration of CCUS technologies and potential CO₂ storage sites. Chevron's Gorgon CO₂ Injection Project, which is the world's largest CCS operation, has safely sequestered over 5 million tonnes of CO₂ to date.

Sustained global demand and growth for natural gas and LNG is expected to be driven by emerging Asian economies. Given the proximity of Australia's LNG industry to the region, Australia is positioned as a secure and competitive supplier to continue to meet and supply the region's current and future energy needs. This demand is expected to encourage ongoing development of Australia's existing offshore gas fields, progress the development of offshore resources held under retention leases and support continuing exploration.

Continued industrial activity will assist these developments as projects come on-line, major project field sequencing is determined, wells are drilled to reduce uncertainties and collaborative commercial developments progress. The future development of Australia's offshore gas resources is less likely to involve the integrated development of new upstream and downstream infrastructure. Instead, it is more likely to involve the development of new fields as backfill (e.g. Browse and

¹⁴ <https://australia.chevron.com/news/2017/our-economic-contribution>

¹⁵ <https://newsroom.nt.gov.au/mediaRelease/34293>

Barossa) or the incremental expansion of existing infrastructure (such as Scarborough-Pluto 2). [Attachment B](#) provides a summary of Australia's upcoming major LNG and offshore oil and gas developments.

This is a consequence of declining production from foundation projects and the challenging economics of developing new greenfield facilities in a country that already hosts ten operational LNG projects, some of which have space for future expansion. A combination of some large and numerous smaller, more distant, or more technically complex fields will be developed to backfill existing production assets.

To realise the development of these smaller and often more isolated fields, industry collaboration is critical. Collaboration can spread the risk on project investments, encourage third-party participants, enable third-party infrastructure access (and development) and foster tolling arrangements. Increased collaboration will likely underpin the next wave of development of Australia's offshore resources.

Tightness in domestic gas markets is providing incentives to explore and develop offshore fields that have traditionally been considered sub-economic. These fields are directly linked to existing domestic gas supply infrastructure rather than export focused LNG plants. This renewed interest is particularly evident in the offshore Gippsland and Otway Basins.

As the Gippsland Basin is a mature basin, ensuring management of its late life production profile will be important to ensuring continued supply into the east coast market. Operators are examining ways to maximise production and meet east coast market demand. This includes consideration of CO₂ management.

Failure to realise Australia's offshore resources potential may result in inefficient infrastructure use, sub-optimal and delayed development outcomes, and stranded fields. This has flow-on effects to the broader economy, the sustainability of regional areas, small and medium businesses and employment.

Government Reviews and Initiatives

Offshore Safety Review

The department has finalised a review of the offshore safety regulatory regime to ensure that it continues to protect offshore workers from risks to health and safety. The review examined the Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009, and associated parts of the *Offshore Petroleum and Greenhouse Gas Storage (OPGGGS) Act 2006*.

Overall, the Safety Review found that the current offshore safety regime is working well, but it identified areas that can be strengthened.

Following extensive stakeholder consultation, the department developed a policy framework¹⁶ that sets out proposed amendments intended to facilitate continuous improvement for safety in the offshore industry. These policy reforms are aimed at improving safety outcomes by strengthening compliance mechanisms, improving engagement between stakeholders, clarifying existing arrangements, and recognising the importance of mental health.

¹⁶ <https://www.industry.gov.au/data-and-publications/offshore-oil-and-gas-safety-review-0>

The department has commenced the process of drafting amendments to the OPGGS Act and Safety Regulations to incorporate the policy measures.

Decommissioning Review

In October 2018, the department announced it was undertaking a review of the policy and legislative frameworks that underpin offshore oil and gas decommissioning. The department released a discussion paper for public consultation.

Consultation on the discussion paper was undertaken throughout late 2018 and into 2019 with a series of public forums and meetings held in Perth and Melbourne. Twenty three submissions were received and have been made publicly available on the department's consultation hub.

On 14 December 2020, the department released an enhanced framework for public consultation, and sought the views of stakeholders to inform the government on how the framework could best be implemented. Consultation closed on 22 January 2021.

On 8 April 2021, the government endorsed the enhanced framework and released an exposure draft of the Offshore Petroleum and Greenhouse Gas Storage Amendment (Titles Administration and Other Measures) Bill 2021. The Bill was passed by Parliament on 24 August 2021, completing the first step of policy implementation.

The enhanced framework includes new measures to manage the financial and environmental risks associated with mature offshore petroleum assets. The enhanced framework will:

- strengthen existing trailing liability provisions to enable the government to call back a former titleholder in a greater range of circumstances
- increase oversight of changes in company control and financial assurance
- improve planning for decommissioning, including by modernising the requirements for Field Development Plans
- expect early and proactive use of remedial directions powers
- Improve public comment and transparent reporting

Implementation of the enhanced framework will continue over the next year in consultation with industry.

Reporting and confidentiality of production data

As part of the department's strive for continuous improvement and leading practice regulation, and ahead of sun-setting in 2024 of the Offshore Petroleum and Greenhouse Gas Storage Act (Resource Management and Administration) Regulations 2011 (RMA Regulations), the department engaged Acil Allen to review Parts 7-10 and schedules 1-5 of the RMA Regulations in 2020. These parts of the regulation relate to the management, submission and release of geoscientific data for petroleum and greenhouse gas; initial and well completion reports, cores, cutting and samples; monthly production reports and the classification and release of documentary information.

The department's policy review of the RMA Regulations is currently scheduled to be completed by the end of 2021 with refreshed regulations in place by 2023.

The RMA Regulations will strike the right balance between appropriately protecting confidential information, which stimulates further investment, while allowing for its use by government to manage Australia's oil and gas resources.

The data and information required under the RMA Regulations contributes to Australia's knowledge base of when and where a discovery of oil and/or gas has been made, the estimated size of the resource and once production has commenced, the RMA Regulations enables the government to monitor and control how much of the resource has been exploited and how much is left. This information is available to inform government policy decisions, and is available to industry or researchers, under specified conditions, for analysis or studies.

The RMA Regulations allow for information to be kept confidential where the information is considered a trade secret or where information disclosure would, or could reasonably be expected to, adversely affect the person's business, commercial or financial affairs.

The department's ongoing review of the RMA Regulations includes consideration of the confidentiality and release provisions, and whether amendments are required to continue to ensure the appropriate balance between protecting confidential information and allowing for its release and use.

Australian Domestic Gas Security Mechanism (ADGSM)

Introduced in July 2017, the ADGSM gives the Commonwealth Resources Minister the ability to restrict LNG exports when a domestic gas market is determined to be in shortfall for the following calendar year. The Minister must have determined a domestic shortfall year by 1 November.

The Resources Minister determines whether a shortfall market exists under Division 6 of the *Customs (Prohibited Exports) Regulations 1958*. The decision is informed by expert advice from:

- the Australian Energy Market Operator (AEMO)
- the Australian Competition and Consumer Commission (ACCC)
- industry and other government sources

In 2019, the Government reviewed the ADGSM, finding it has been effective in securing domestic gas supply¹⁷ and recommending:

1. retaining the ADGSM until its scheduled repeal in 2023
2. considering a change to the Total Market Security Obligation to better enable it to recover sufficient gas in the unlikely event of domestic shortfall
3. amending the ADGSM's guidelines to reference the Australian Competition and Consumer Commission (ACCC)'s LNG netback price series in estimating a potential shortfall.

The Government has accepted and implemented the first and the third recommendations. After considering the second recommendation, in January 2021 the Government instead entered a new Heads of Agreement with the east coast's three LNG exporters.

Heads of Agreement

The Australian Government first signed a Heads of Agreement with east coast LNG exporters in October 2017. A new agreement was signed in September 2018. Under these first two agreements, LNG exporters committed to offering uncontracted gas to the domestic market before selling it internationally in the event of a supply shortfall. The agreements represented an important market-based and industry-led solution to safeguard against any potential domestic gas supply shortages.

¹⁷ <https://www.industry.gov.au/data-and-publications/australian-domestic-gas-security-mechanism-review-2019>

The current Heads of Agreement, announced in January 2021, covers supply until 1 January 2023. Under the new agreement, east coast LNG exporters commit to offering all uncontracted gas to the domestic market before offering the gas to international spot markets. Such offers are to be made with reasonable notice and on competitive market terms.

The most recent interim report in the ACCC's Gas Inquiry 2017-2025 found that although it has yet to receive sufficient information to determine compliance with the previous Heads of Agreement, users have reported suppliers are now more flexible and willing to negotiate on non-price terms and conditions, like volume splitting and delivery scheduling.

Prospective National Gas Reservation Scheme

In August 2019, the Minister for Energy, Minister for Resources and the Treasurer announced the Australian Government would consider options for a prospective national gas reservation scheme to deliver affordable, reliable gas to the east coast gas market. This consideration was affirmed by the Prime Minister on 15 September 2020 in his announcement of the Gas-Fired Recovery suite of measures.

In late 2020, the department released the *Options for a prospective national gas reservation scheme* issues paper and conducted more than 20 targeted stakeholder consultations.¹⁸ The department received over 40 submissions in response to the issues paper. A range of stakeholders including gas producers, LNG exporters, industrial gas users, industry associations, a community organisation and state and territory governments made submissions.

The department is currently preparing advice for the Government. As indicated in announcements relating to this policy process, any scheme would be prospective – that is, only apply to new projects.

Strategic Basin Plans

In the 2020-21 Budget, the Commonwealth committed \$28.3 million for the development of a series of Strategic Basin Plans to accelerate development of Australia's gas resources and increase domestic supply. This was a key initiative of the Government's Gas Fired Recovery Strategy. Strategic Basin Plans provide a framework designed to accelerate exploration and development activities in strategically important petroleum basins. These plans identify what resources opportunities exist, how governments can accelerate their development and how benefits to the Australian community can be maximised, while taking into account the unique geological conditions, infrastructure needs, and environmental, Indigenous and community concerns. Strategic Basin Plans recognise the shared responsibility of industry and all levels of government to deliver resources.

The first basin assessed under the program was the Beetaloo Sub-basin in the Northern Territory. The \$224 million Beetaloo Strategic Basin Plan, released on 14 January 2021, sets out a series of actions to accelerate resource development and realise up to 6000 additional jobs stemming from development. The plan builds on the growing industry momentum and the government initiatives already underway in the region, including \$8.4 million that was already committed by the Government to accelerate the development of the Beetaloo.

¹⁸ <https://consult.industry.gov.au/onshore-minerals/gas-options/>

Measures included under the plan include a \$50 million co-funded Commonwealth grant program, the Beetaloo Cooperative Drilling Program, which incentivises accelerated exploration and development in the Beetaloo. The program was opened in March 2021 and to date up to \$21 million of the total \$50 million funding has been awarded to eligible projects. Other measures include \$173.6 million for a new Roads of Strategic Importance corridor, and \$2.2 million to support the Northern Land Council in their activities to ensure positive outcomes to Traditional Owners from the development of the Beetaloo.

The second plan announced under the program is the North Bowen and Galilee Basins located in central Queensland, and will see the Commonwealth invest \$20.7 million towards realising the gas potential in the region. The plan leverages over \$400 million in research and critical infrastructure upgrades to support local businesses and communities. Measures under the plan include \$15.7 million to conduct pilot gas well field trials of innovative drilling methods hoped to reduce production costs and a \$5 million co-contribution to a series of pipeline studies to identify best routes to market.

The third Strategic Basin Plan under the program, currently underway, will be undertaken in the Cooper and Adavale Basins. These basins stretch from the north-west of South Australia through to south-west Queensland. The final basins to be assessed under the program are yet to be announced.

National Gas Infrastructure Plan

As part of its work to bring more supply to market, the Government is developing a National Gas Infrastructure Plan (NGIP) that aims to support a more strategic approach to gas infrastructure investment to address short term supply shortfalls and link new basin development to demand centres.

The Interim NGIP, released on 7 May 2021, identified priority infrastructure developments to alleviate forecast southern gas supply shortfalls in the near-term and identified several critical infrastructure projects that are required to alleviate these risks. The Government has committed \$38.7 million in targeted support that will accelerate critical projects to final investment decisions (FID) and mitigate the risk of commencement delays.

The first full NGIP, to be released in late 2021, will identify priority infrastructure projects and provide a least cost development pathway for the east coast gas market out to 2040. This will help address the long-term needs of Australian businesses and consumers, helping to unlock supply, deliver a more efficient transport sector and put downward pressure on prices for gas users.

Like the electricity sector, the Government wants the market to step-up and make timely investments in critical projects. However, the Government cannot sit back and allow the shortfall to eventuate as this would have a devastating impact on the economy. To ensure action can be taken if required, the Government is developing a Future Gas Infrastructure Investment Framework to support critical infrastructure projects reach timely investment decisions.

Gas Market Reforms

The Government is also focused on a range of gas market reforms to ensure that the Australian gas market is working to benefit all Australians.

This includes a range of initiatives to ensure that long-term domestic gas contract prices remain internationally competitive and that there is increased transparency and competition in the gas market.

Market reforms include:

- Implementation of a regulatory package that will increase market transparency and support gas users to negotiate more competitive supply agreements. These significant reforms will be in place by the end of 2022 and will:
 - increase price disclosure to help users negotiate gas supply contracts
 - enable more informed decisions by gas producers about gas exploration, consumption and production;
 - help to facilitate efficient planning and investment across the gas market;
 - provide more timely and accurate signals about potential supply-demand balance issues, which will enable the market to respond more efficiently to changing market conditions; and
 - promote competition and the efficient trade of gas and infrastructure services by aiding price discovery to reduce the imbalance in bargaining power.
- A package of reforms to develop Wallumbilla as Australia's Gas Supply Hub and create a more open, transparent and liquid gas trading system. These reforms will be consulted on with stakeholders in the second half of 2021. By building up the capacity of Wallumbilla, competition and liquidity at the Hub will be increased, which will help to establish a highly visible and trusted domestic gas reference price.
- Improvements to support a more efficient pipeline and transportation market through a package of reforms agreed by Energy Ministers. This will deliver a simpler regulatory framework that will support investment in gas pipelines, and more efficient use through a more dynamic secondary pipeline capacity market. These pipeline regulatory reforms have valued net benefits in excess of \$1 billion over a 20-year period, and are expected to reduce costs of transportation and delivered gas, improve access to pipelines, and facilitate more effective competition in the gas market
- The Government is also encouraging a more level playing field in contract negotiations between gas suppliers and commercial and industrial consumers. This will be done through the development of an industry-led code of conduct and the Government working with industry to develop a voluntary, standardised contractual framework to assist commercial gas users in supply contract negotiations.

Gas Industry Social and Environment Research Alliance

The department has continued its work with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to ensure timely implementation of the Australian Government's \$13.7 million 2020-21 Budget measure to expand the Gas Industry Social and Environment Research Alliance (GISERA). The CSIRO's GISERA is a collaborative vehicle that provides independent, peer-reviewed and publicly available research on the social, environmental and economic impacts of Australia's onshore gas industry. Established in 2011, the GISERA collaboration comprises the CSIRO, Commonwealth and state governments and various gas development companies. Its key objective is to support mature and evidence-informed public discussion regarding onshore gas development.

GISERA's expansion into five jurisdictions (Queensland, New South Wales, South Australia, Northern Territory and Western Australia) since its establishment demonstrates the ongoing need for communities to have ready access to credible and scientifically robust evidence on gas developments in their local areas. This not only counters the distribution of misinformation, but also assists communities to understand what the relative level of residual risk is for them so they can make informed decisions about what activities should occur in their regions. Supporting evidence-based decisions will help to provide greater confidence in the gas industry from local communities.

Domestic Liquid Fuel Security

The Australian Government's long-term fuel security goal is to increase our domestic storage and to hold a sovereign refining capability that meets our needs during an emergency, as well as into the future. To support our long-term fuel supplies, the government has developed a comprehensive fuel security package, enabled through the *Fuel Security Act 2021*, which commenced on 30 June 2021. Through this package, the Government has secured the commitments of the Viva refinery in Geelong and the Ampol refinery in Brisbane to operate until at least mid-2027 (with the option to extend until mid-2030). This secures the jobs of the around 1,250 direct employees across the two refineries.

The Act puts in place a new liquid fuel security framework that is designed to improve Australia's long-term fuel security and ensure a domestic refining capability of our critical fuels. The Act draws on the lessons arising from the COVID-19 pandemic in relation to national sovereignty and self-sufficiency.

Under the Act, the Fuel Security Services Payment (FSSP) has been payable since 1 July 2021 and secures Australia's long-term refining capabilities by paying refiners during loss-making periods, based on how much fuel (petrol, diesel, and jet fuel) they produce in Australia to relevant standards. To receive the FSSP, domestic refineries must commit to keep operating until at least 30 June 2027, with the option to extend this to 30 June 2030. Payments are tied to market conditions, and are paid on a quarterly basis, but only to limit downside risk.

Another key element of securing the future of the refineries is the Government's commitment to co-fund major infrastructure upgrades that will deliver better quality fuels. These upgrades include support for desulfurisation and the Government bringing forward the review of the fuel quality standards to resolve the technical solution for aromatics. The major upgrades will create around 1,750 construction jobs, bring benefits of over \$1 billion in avoided health costs due to better air quality, and help motorists save on car maintenance costs.

The Act also established a minimum stockholding obligation (MSO), requiring fuel importers and refiners to maintain a level of petrol, diesel and jet fuel from 1 July 2022. An MSO is an efficient way to achieve certainty of fuel stocks and is commonly used in other developed nations such as the United Kingdom and Japan. Minimum stocks can be called on in times of supply disruption, in emergencies and if fuel demand unexpectedly increases.

Diesel is our most important and versatile fuel and additional diesel stocks are needed to cover us during significant events like flooding, bushfires and pandemics. The Boosting Australia's Diesel Storage Program is providing up to \$260 million in competitive grants with matched funding from industry to build additional domestic fuel storage, boosting Australia's diesel storage by 40 per cent. The program supports industry to prepare for an increase to the minimum stockholding obligation for diesel in 2024. Holding more fuel stocks in Australia will increase our resilience to supply disruptions, thereby protecting consumers and the economy from fuel shortages.

In a worst case scenario, Australia may not be able to import liquid fuels. Having a domestic refining and a domestic oil production capability means that, in a large-scale emergency, Australia is able to refine the crude oil that is produced in the country to maintain liquid fuel supply for critical services. Domestic refining, combined with domestic oil production, create an enduring supply to ensure we are prepared for any event.

Conclusion

Australia's prosperity and status as a leading energy supplier to the world depends on retaining and attracting investment in our resources sector. Our oil and gas industry is supported by a stable regulatory framework, a certain taxation system and a highly skilled workforce.

This supplementary submission provides an update on the department's work to ensure domestic energy security and continue energy exports while providing for safety within the oil and gas sector. In short, maximising the benefit to the public of Australia's oil and gas reserves.

Attachment A

Australia's LNG Projects – as at 26 August 2021

Project	Investors (Operator in Bold)	Location Basin Plant	Status	Size	Cost
North West Shelf	Woodside (16.67 per cent) Shell (16.67 per cent) BP Developments 16.67 per cent) Chevron (16.67 per cent) ¹⁹ BHP Billiton (16.67 per cent) MIMI (16.67 per cent) CNOOC (5.3 per cent of upstream molecules only)	WA Carnarvon Karratha	FG 1989 (pipeline gas in 1984)	16.9 Mtpa 5 trains	US\$34b
Darwin LNG	Santos (43.4 per cent) SK E&S (25.0 per cent) ENI Australia (10.99 per cent) INPEX (11.38 per cent) JERA (6.13 per cent) Tokyo Gas (3.07 per cent)	NT JPDA Darwin	FG 2006	3.7 Mtpa 1 train	Not available
Pluto LNG	Woodside (90 per cent) Tokyo Gas (5 per cent) Kansai Electric (5 per cent)	WA Carnarvon Karratha	FID 2007 FG 2012	4.9 Mtpa 1 train Offshore capacity 7.5 mtpa	US\$14.9b
Queensland Curtis LNG	Shell (50 per cent T1, 97.5 per cent T2) CNOOC (50 per cent in T1) Tokyo Gas (2.5 per cent in T2)	QLD Surat Gladstone	FID Oct 2010 FG Jan 2015	8.5 Mtpa 2 trains	A\$20.4b
Gladstone LNG	Santos (30 per cent) Petronas (27.5 per cent) Total (27.5 per cent) KOGAS (15 per cent)	QLD Bowen and Surat Gladstone	FID Jan 2011 FG Oct 2015	7.8 Mtpa 2 trains	A\$18.5b
Australia-Pacific LNG	Origin Energy (37.5 per cent) ConocoPhillips (37.5 per cent) Sinopec (25 per cent)	QLD Bowen and Surat Gladstone	FID T1 Jul 2011 T2 Jul 2012 FG Jan 2016	9 Mtpa 2 trains	A\$24.7b
Gorgon LNG	Chevron (47.333 per cent) ExxonMobil (25 per cent) Shell (25 per cent) Osaka Gas (1.25 per cent) Tokyo Gas (1 per cent) JERA (0.417 per cent)	WA Carnarvon Barrow Island	FID 2009 FG Mar 2016	LNG – 15.6 Mtpa 3 trains	US\$60b

¹⁹ Chevron is testing the market for its 16.67 per cent stake in NWS project

Wheatstone LNG	Chevron (64.14 per cent) Woodside (13 per cent) KUFPEC (13.4 per cent) Kyushu Electric (1.46 per cent), PE Wheatstone part owned by JERA (8 per cent)	WA Carnarvon Onslow	FID Sept 2011 FG Oct -2017	LNG - 8.9 Mtpa 2 trains	US\$34b
Ichthys LNG	INPEX (62.245 per cent) Total (30 per cent) CPC Corporation Taiwan (2.625 per cent) Tokyo Gas (1.575 per cent) Osaka Gas (1.2 per cent) Kansai Electric Power (1.2 per cent) Chubu Electric (0.735 per cent) Toho Gas (0.42 per cent)	WA Browse Darwin	FID Jan 2012 FG Nov 2018	8.9 Mtpa 2 trains	Over US\$45b
Prelude Floating LNG	Shell (67.5 per cent) INPEX (17.5 per cent) KOGAS (10 per cent) OPIC (CPC Taiwan) (5 per cent)	WA Browse	FID May 2011 FG 18	3.6 Mtpa 1 train	US\$12.6b

Attachment B

Australia's major LNG and offshore oil and gas developments in planning – as at 26 August 2021

Project	Investors (Operator in Bold)	Location Basin Plant	Status	Size	Cost
Barossa	Santos (62.5 per cent) ²⁰ SK E&S (37.5 per cent)	NT Bonaparte	FID achieved Q1 2021 FG 2024		US\$3.6 billion
Scarborough	Woodside (73.5 per cent) ²¹ BHP Billiton (26.5 per cent)	WA Carnarvon	FID – H2 2021 anticipated FG 2024	11.1 Tcf 5 Million tonne	US\$12b
Crux	Shell (82 per cent) SGH (15 per cent) Osaka Gas (3 per cent)		FID 2021	2.2 Tcf	\$2b
Dorado	Santos (80 per cent) ²² Carnarvon Petroleum (20 per cent)		FEED achieved Q3 2021. Phase 1 FID expected H1 2022 FG expected H1 2025	Phase 1: 158 million barrels of oil	
Browse	Woodside (30.6 per cent) Shell Australia (27 per cent) BP (17.33 per cent) Japan Australia LNG (14.4 per cent) PetroChina (10.67 per cent)		FEED Q1 2020 FID expected late 2023	13.9 Tcf	US\$20 billion
Equus Gas Project	Western Gas	WA Carnarvon		2 Tcf	Est. A\$3.5bn

²⁰ Santos finalising deal to sell 12.5 per cent equity in Barossa to Japan's JERA.

²¹ Woodside and BHP agreed to merger of BHP's petroleum assets; merger to be finalised Q2 2022.

²² Santos looking to sell up to 30 per cent of equity in Dorado project, and its Bedout Sub-basin portfolio.