High-profile Aussie gas project due on stream with large CO_2 emissions

CO2 content in Barossa reservoir is between 16% and 20% and will be mostly vented

Upstream, 2 Sep 2025. By Russell Searancke

Santos chief executive Kevin Gallagher (left), BW Offshore chief executive Marco Beenen (centre), and Seatrium chief executive Chris Ong at the BW Opal naming ceremony. Photo: SEATRIUM

Australian operator Santos is preparing to turn on the production taps at the US$4.5 billion Barossa offshore gas project in northern Australia, just as pressure ramps up on the company over the large volumes of carbon dioxide that will be vented into the air and the reporting of an historic leak at its Darwin LNG facility.

Barossa has been the centre of Santos' universe for the past few years as the project is considered vital to its liquefied natural gas business, but the project has had **to fend off various legal challenges**.

Gas from the field will provide the feedstock to enable Santos to re-establish production at its Darwin LNG plant, which has been idle since the end of gas supplies from the Bayu-Undan field.

The gas in Barossa's reservoirs, however, contains between 16% and 20% carbon dioxide — the highest percentage of CO_2 of all Australia's producing offshore gas fields.

According to Santos' offshore project proposal, it intends to remove the majority of the CO_2 via venting offshore, with the remaining CO_2 to be removed onshore at the Darwin LNG facility.

The project proposal stated that total CO_2 emissions from Barossa's floating production, storage and offloading vessel is likely to be between 2.1 million and 3.8 million tonnes per annum.

To put this into perspective, the Darwin LNG plant has a capacity of 3.7 million tpa of LNG, meaning the CO_2 emissions could potentially be greater than the LNG output.

Santos repeated in the project's 2023 Frequently Asked Questions (FAQ) that the CO_2 from Barossa will be vented into the air via CO_2 removal facilities on the FPSO and at Darwin LNG.

The company said CO_2 emissions will be offset through purchasing carbon credits until such time as a planned carbon capture and storage (CCS) project is ready.

The CCS plan is based on repurposing the Bayu-Undan field to receive injected CO_2, but there is no guidance on when this CCS scheme will advance to the final investment decision.

Bayu-Undan is in Timor-Leste's jurisdiction and the Timorese have expressed an interest in redeveloping Bayu-Undan for additional production before it is converted for CCS.

This means that Santos and its two Barossa joint venture partners — SK E&S of South Korea (37.5%) and Japan's Jera (12.5%) — could be venting CO_2 for much longer than originally planned.

Purchasing carbon credits

The joint venture has to comply with the Australian government's Safeguard Mechanism, which sets a carbon price within the context of a requirement for net zero emissions from day one of production.

"Santos expects to comply with the Safeguard Mechanism by storing the CO_2 at the Bayu-Undan CCS project once the approvals are in place and the CCS infrastructure is operational. Before then, Santos will purchase carbon credits to offset reservoir CO_2 emissions," the company said in the FAQ.

According to the public policy Think Tank, The Australia Institute, the offset prices for the Barossa joint venture will cost about A$500 million (US$326 million) to 2030, and more if the carbon price was increased.

The Institute for Energy Economics and Financial Analysis (IEEFA) has previously described Barossa as an "emissions factory with an LNG by-product – there's going to be more waste than product".

Rick Wilkinson, chief executive of the Australian energy advisory firm EnergyQuest, told Upstream the long-term plan is for the depleted Bayu-Undan field to be used for CCS CO_2 injection.

"However, with Barossa first gas imminent, the lack of a final investment decision for Bayu-Undan CCS may mean the CCS timing is slipping, and more offsets will be required," said Wilkinson.

Upstream has requested a status update from Santos on its CO_2 venting and CCS plans.

BW Offshore, which is the provider of the brand new BW Opal FPSO, told Upstream that CO_2 will be extracted from the gas on the floater, but all efforts are under way to minimise that period and move to a CCS solution as soon as possible.

The design of the FPSO prioritises minimising emissions, said BW Offshore, and is not configured for offshore liquefaction or reinjection. It is ready, though, for CO_2 to be exported to a CCS facility.

Historic leak at Darwin LNG

Meanwhile, Santos is being criticised in Australia after local media reported that a historical leak in the LNG tank at the Darwin LNG facility was left unrepaired for years.

It is understood the leak released minor volumes of gas, and appeared during the period that ConocoPhillips was the operator. It is understood that repairs have since been carried out.

Santos

ASX/Media Release

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Barossa LNG FPSO receives first gas following RFSU

Santos announces that the BW Opal FPSO (floating production, storage and offloading vessel) has successfully received first gas into the facility to commence production operations. This follows the BW Opal achieving ready for start-up status on 16 September 2025, and the commencement of flow from the subsea wells. This is a major milestone for Santos and its Barossa joint venture partners, PRISM Energy Australia[1] and JERA Australia, in delivering the Barossa LNG project.

Santos is also pleased to report that all six wells drilled in the Barossa gas field have intersected excellent reservoir quality. Testing has been completed on five of the six wells, demonstrating outstanding flow capacity that exceeds pre-drill estimates, with expected average potential well deliverability of around 300 million standard cubic feet per day. This success underscores the robust capacity of the Barossa field to sustain long-term production.

Further, the Northern Territory Environment Protection Authority has renewed the Environment Protection Licence for Darwin LNG, commencing 19 September 2025. This paves the way for first gas into, and start-up of, the Darwin LNG plant.

Santos Managing Director and Chief Executive Officer Kevin Gallagher said, "RFSU for the BW Opal marked the formal transition from project execution to production operations, following RFSU for the Darwin LNG plant upon completion of the life extension work scope and the commencement of production from the offshore subsea wells.

"First gas into the FPSO is an important step for the project and a credit to the hard work of our people and support from our partners. It puts us on track to deliver reliable energy to our customers and long-term value to our shareholders from Barossa LNG," said Mr Gallagher.

The BW Opal is among the largest and most technically advanced FPSOs ever built, featuring a 358-metre hull and accommodation for up to 140 personnel. It has gas handling capacity of 850 million standard cubic feet per day and condensate handling capacity of 11,000 barrels per day. Industry-leading combined-cycle power generation, incorporating waste heat recovery and steam turbine technology, was used to maximise energy efficiency and is expected to reduce non-reservoir emissions by more than 50 percent (over 0.75 million tonnes of CO2e per year) compared to the Offshore Project Proposal accepted by the regulator NOPSEMA.

The FPSO is the production centrepiece of Santos' Barossa LNG project and will be permanently located in the Barossa gas field approximately 285 kilometres offshore from Darwin in the Northern Territory of Australia. It will feed the Darwin LNG plant for the next two decades.

With RFSU of the BW Opal, Santos will recognise a lease liability of ~US$665 million and a right-of-use asset value of ~US$1.4 billion comprising the lease liability, FPSO pre-payment and other direct costs. The impact of the operating lease liability is expected to increase gearing ~2.4 percentage points[2].

This ASX announcement was approved and authorised for release by Kevin Gallagher, Managing Director and Chief Executive Officer.

[1] PRISM Energy Australia, formerly SK E&S.
[2] Financial information included in this release is unaudited and subject to finalisation of the company's accounting and audit processes, and Board review. As such, actual results for the year ending 31 December 2025 may differ from the information given in this release.

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