



23 March 2023

**INTENDED PUBLIC SUBMISSION FOR WEBSITE**

**House Standing Committee on Climate Change, Energy, Environment and Water**

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CANBERRA ACT 2601

Submitted via email: CCEEW@aph.gov.au

Dear Committee Secretary,

**INQUIRY INTO THE 2009 AND 2013 AMENDMENTS TO THE 1996 PROTOCOL TO THE CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER, 1972 (LONDON PROTOCOL)**

**Introduction**

Woodside Energy Limited, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI) Pty Ltd, Shell Australia Pty Ltd and Chevron Australia Pty Ltd have formed a joint venture (the JV) to progress feasibility studies for a large-scale, multi-user Carbon Capture and Storage (CCS) project offshore near Karratha in Western Australia. The JV brings together the diverse capabilities of five industry leaders to study the technical, regulatory and commercial feasibility of capturing carbon emitted by multiple industries and storing it in offshore reservoirs in the Northern Carnarvon Basin. The JV is currently working through concept select with the aim of moving into concept definition in the second half of 2023.

To achieve Australia's legislated emissions reduction target of 43% by 2030, a mix of technologies and solutions will be required. Development of new technologies, such as direct air capture, may offer other prospective pathways for decarbonisation, however a use for the CO<sub>2</sub> or a safe and reliable storage solution will be required. Of note, the NZE Scenario uses 6.2 Gt of CCUS in 2050 while the median of the IPCC scenarios see about 17<sup>1</sup>Gt.

While industry first looks to decarbonise at a facility level, as the energy transition progresses, it is expected that demand will significantly increase for new energy products such as hydrogen and ammonia, and lower carbon services such as CCS and Carbon Capture and Utilisation (CCU), collectively CCUS. As noted by the International Energy Agency, the CCUS facilities currently in operation around the world have a collective capacity to capture more than 40 MtCO<sub>2</sub> each year. Wood Mackenzie estimates that investment committed to CCUS in 2023 could reach US\$20 billion<sup>2</sup>. In the same analysis, Wood Mackenzie anticipates carbon capture capacity to reach 370 million tonnes per annum by 2033, of which 60% is from known projects and 40% anticipated new projects required to meet decarbonisation targets

CCS is based on a well-understood technology that has been in use since the 1970s. Not only is CCS technology technically sound, but it also has a key role to play in meeting the world's emissions reduction requirements. As outlined in a 2022 report<sup>3</sup> from the UN Intergovernmental Panel on Climate Change (IPCC), CCS is one of a suite of solutions that can help deliver net-zero and net-negative emissions.

<sup>1</sup> (<https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>, Pg132 immediately above Figure 3.6).

<sup>2</sup> Wood Mackenzie Lens CCUS Service. Note: Capex estimates for 2023 FIDs is built up using Wood Mackenzie's Levelised Cost of CCS analysis, and some individual estimates or publicly-announced figures

<sup>3</sup> IPCC 2022. "Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change" Summary for Policymakers paragraph C.4.6.

The JV welcomes the opportunity to contribute to the deliberations of the Senate Committee on Climate Change, Energy, Environment and Water in relation to the 2009 to the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol). In particular, we wish to draw the Committee's attention to the potential opportunity for international market development for Carbon Dioxide (CO<sub>2</sub>) streams.

### **International market development for CO<sub>2</sub> streams**

Australia is uniquely positioned, with subsurface characteristics that are highly suitable for CCS. The JV is initially focused on delivering an emissions reduction solution for heavy industry in the Pilbara. This could provide a foundation to build a CCS industry in Australia to create new job opportunities, catalyse innovations, drive trade, monetize low-carbon product manufacturing, and sustain existing industries to decarbonise.

It is strongly recommended that consideration is given to the full life cycle challenges for reducing emissions and the requirements of Australia's trading partners in the Asia Pacific. Today's regional trading partners of LNG and iron ore are likely to be the future buyers of low emission products. As Australia seeks to leverage its competitive advantages for low emissions hydrogen and ammonia, there is also an opportunity to maximise our competitive position in CCUS. The technology has a role in both enabling low carbon products for domestic consumption and export, as well as providing a pathway for partners in the region to decarbonise their own industrial emissions.

We note from publicly available commentary and feedback from our customers and partners, that there is clear acknowledgement the pathways to decarbonisation will differ subject to a range of economic, industrial, social and local factors. Where utilising fossil fuels continues, capture technology will play an important role to decarbonise. In this case CCS will be essential to safely manage CO<sub>2</sub>.

In the Asia-Pacific region, many major industrial point emitters do not have access to viable CCS sites and/or facilities of appropriate type and scale. With combined annual CO<sub>2</sub> emissions of 840 million tonnes, Japan, Korea, Taiwan, and Singapore face the challenge of emissions reduction<sup>4</sup> and will foreseeably look to near-neighbour nations to support their efforts. In this regard, strong interest is already being shown from Asia-Pacific nations and trading partners. For example, Japan's Ministry of Economy, Trade and Industry estimates that Japan may need to capture and store 140-240mtpa of CO<sub>2</sub> by 2050, and is targeting 6-12mtpa of CCS by 2030.

Market screening shows credible untapped potential in Southeast Asia assuming favourable regulation. The region has 68 Mtpa<sup>5</sup> of likely emissions for CCUS application located in clusters. The most promising sectors include natural gas processing, refining, petrochemicals and cement. While Southeast Asia has abundant storage potential, development of competitive stores in Australia could offer compelling alternatives.

To enable transboundary movement of CO<sub>2</sub>, appropriate shipping options will become increasingly important to support this emerging industry/trade opportunity to grow. It is evident that shipbuilding companies are actively working on suitable ship designs to allow for CO<sub>2</sub> transfer which demonstrates the growing confidence in building the industry globally.

The award in 2022 of Greenhouse Gas Assessment Permit G-10-AP (the permit) to members of the JV, represented the first important step towards the potential development of one of Australia's first multi-user CCS projects, suitably located to aggregate emissions from various regional hard-to-abate industry. The permit overlaps the now depleted Angel gas field. To support assessment of the permit and its suitability for the permanent geological storage of CO<sub>2</sub>, Woodside and the JV partners plan to undertake a work program which leverages extensive existing data gained through decades of petroleum exploration and production.

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<sup>4</sup> [Unlocking Asia-Pacific's vast carbon-capture potential | McKinsey](#)

<sup>5</sup> Focus on Indonesia, Malaysia and Singapore, source: BCG CCUS tool; BCG analysis

While the size of the CCS facility being progressed by the JV is yet to be determined, notionally it could have a processing capacity of up to 5 million tonnes per annum, potentially making this CCS opportunity one of the largest regional CCS hubs in the Asia Pacific region.

The cost of CCS is largely dependent on the ability to access and capture concentrated CO<sub>2</sub> at scale. The aggregation of volumes from both domestic and international customers will help scale transport and storage solutions and reduce customer costs that may otherwise be prohibitive. Having the option of working with international customers could improve project economics, and therefore make services more accessible for local industry.

### **Recommendations**

The JV strongly urges the Committee to consider the regulatory, institution and/or other requirements for future phases of CCS in Australia to be supported by the international transfer of CO<sub>2</sub>.

While the JV acknowledges that any policy development and government decision-making on this matter would need to be supported by a deep understanding of the potential reward, enabling transborder movement of CO<sub>2</sub> could represent a new and wide-range of economic benefits for Australia.

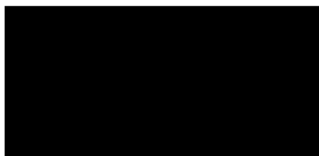
The JV welcomes regulatory certainty so that policy initiatives and investment decisions of industrial emitters and service providers can proceed with confidence. As such, we welcome clarity from the Australian Government on its interpretation of the operation of the London Protocol.

The JV notes the critical role of governments in reducing regulatory barriers that may prevent emission reduction options in its own jurisdiction and of its trading partners. There are international examples whereby jurisdictions have lodged bilateral agreements with the International Maritime Organisation to provide for transboundary CO<sub>2</sub> movement and storage as a provisional option ahead of the 2009 Amendment being ratified. Clarification from the Australian Government including plans to ratify with 2009 Amendment is a welcome step to support the certainty required to help Australian and Asia Pacific partners decarbonize.

Finally, the JV draws the Committee's attention to input it may receive from the Australian Petroleum Production and Exploration Association (APPEA). The JV has contributed to and is supportive of APPEA's advocacy on matters related to the Committee's enquiries.

The JV welcomes the opportunity to further assist the Committee in its understanding of the matters raised in our submission.

Yours sincerely



**Jayne Baird**

Vice President Woodside Carbon Solutions  
Northern Carnarvon CCS Joint Venture