



Westernport and Peninsula Protection Council Incorporated (WPPC Inc)

Submission to the Standing Committee on Climate Change, Energy, Environment and Water

1. Westernport and Peninsula Protection Council Incorporated (WPPC Inc)

WPPC Inc was formed in 1971 by a diverse group of people concerned about proposals for inappropriate and potentially disastrous developments within the biosphere of Westernport Bay. The group remains active, with a core base of around 200 members. WPPC Inc works closely with other environmental organisations, state environmental bodies, researchers and local government.

The context of our response

The planned next phase of the CarbonNet proposal to store carbon generated from a Latrobe Valley black coal to hydrogen project, involving Kawasaki Industries and others prompted our response to the Standing Committee. We understand that there is currently one carbon capture and storage (CCS) project underway in Australia (Gorgon), with several more in planning or early approval stages, including the CarbonNet (black coal to hydrogen) project above, to which the Federal and Victorian governments are investing \$150 million to a (reported) A\$500m project which 'could' store up to 1.8 million tonnes of (its own) CO₂ emissions per year¹.

We are aware that the House of Representatives Standing Committee on Climate Change, Energy, Environment and Water, has been tasked to inquire into and report on 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), with regard to:

- a. the environmental benefits and impacts of exporting and importing carbon dioxide streams for the purpose of sub-seabed sequestration
- b. the environmental benefits and impacts of marine geoengineering activity, such as ocean fertilisation, for scientific research
- c. the international market for carbon dioxide streams
- d. the interaction of the proposed amendments with greenhouse gas inventories and regulatory and reporting streams.

WPPC and its allies are extremely concerned that we only have 'one shot' to address climate change for our oceans, our environment and our people. We urge our governments at all levels to take this problem seriously and not be influenced by 'big money' for short term gain. We hope to see governments work with diverse experts in the field to *directly* address climate solutions that have been empirically tested to bear results; and to fund new technologies with reliable end to end projected outcomes.

Mitigating climate change to stay well below 2°C of warming depends on a timely transition to low carbon energy. Cumulative emissions from each year between now and 2030 will determine if we achieve the Paris 1.5°C goal.

We are not experts in this field: we represent a membership of concerned citizens/taxpayers. We have not had opportunity to call on industry-specific experts to inform our response and have relied on our trusted colleagues' and our own research into the CCS industry and its relationship to the London Protocol, notably Article 6.

¹ Hydrocarbons technology, March 2021, [Kawasaki and partners begin hydrogen production from coal in Australia \(hydrocarbons-technology.com\)](https://www.hydrocarbons-technology.com) accessed 12 mrch, 2023



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In several of our responses, we have used the proposed Victorian black coal to hydrogen project, with its CCS aspect as an example of our concerns. While we are aware that CCS technology has been in development (and use) for many years, the notion of opening import and export markets for CCS (primarily for CCUS – carbon capture utilisation and storage) brings another era of commitment to this technology and its risks, including potential failure to deliver on climate targets.

We are aware that fossil fuel use will not be phased out as quickly as we need it to, and the Paris Agreement has outlined the potential use of CCS to mitigate CO2 emissions while alternative fuels and technologies are developed. The risk of over use, over investment and reliance due to industry and international pressure is high.

There are many unknowns of the interaction of CCS with the environment, and a contemporary history of industrial failures and accidents. Combined with the fragility of remaining ecosystems, and the 'mixed bag' that currently constitutes CCS projects, we support the '*precautionary principle*' as adapted in the 2006 amendments to the London Protocol and may refer to this in our response.

Our comments relate to parts a) and d) of the Terms of Reference.

2. Summary

In summary, we submit that:

1. CCS /CCUS technology and implementation face geographical, environmental, social, and political challenges.
2. Australia should not support, import or export carbon for new capture and storage (CCS), in particular for the use of hydrogen from coal or other projects such as enhanced oil or gas production from carbon storage (CCUS) that develop or extend fossil fuel use.
3. We believe a reliance on CCS /CCUS to extend the use of fossil fuels is against the intent of the amendments to the London Protocol.
4. There is no social license for CCUS projects that aim to export carbon for storage in Australia.
5. CCS technology, while growing, and found effective in (few) specific studies and scenarios, is far from proven as globally effective. It should not be relied on 'across the board' as a method of reducing carbon emissions to benefit the environment, or meet emissions reduction targets. Its promotion as such may contribute to further ocean destruction through misplaced attempts to address climate change and its impact on oceans.
6. Many studies highlight the lack of cost benefit for the outcomes produced. Resources should be spent on projects that will directly reduce outputs to address climate change and support the health of our oceans.
7. If CCS does expand in Australia, strong, unambiguous, independent, relevant and transparent assessment frameworks, legislation, monitoring and reporting provisions must accompany any project. Accountability to the public at large through accessible reports is essential, given the dire consequences of global warming /climate change to ocean and human life and the proposed investment to CCS.



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8. While it may be tempting, through carbon offsets and money-making ventures, the import of carbon for storage in Australia would significantly magnify the climactic, financial, social and long-term risks, especially to our oceans that existing and planned CCS and CCUS facilities afford. We are not a refuse site - we should be smarter than that.
9. Contracts for current planned CCS projects, should they proceed must set out clear and unambiguous liability and compensation provisions for any company /country that participates in any aspect of the end-to-end process involving CCS. Should import/export of CCS proceed (as stated, we are opposed to this), these provisions are crucial.
10. Any assessment of greenhouse gas emissions, carbon capture (or lack of) in CCS projects should take into account supply and end to end processing, production and storage emissions. Reporting must be transparent and accessible to the public.
11. Legislation, assessment and reporting authorities need to quickly work towards being consistent, with clear delineations of responsibility for project oversight between state and federal governments. The community at large should have access to these provisions.

In addition:

12. We are not convinced that employment options generated by significant investment into CCS, for local or import arrangements for these projects will be sufficient, due to their need to reduce costs, use of remote technology and relatively limited life span as fossil fuels run out and industries decarbonise in other ways.
13. Greater investment now into training, research and development in renewables and associated industries (which we acknowledge will also rely heavily on technology) will provide long term employment. Looking towards carbon credits through better protection to blue carbon is also critical.
14. Australia, with its renewable resources, technological capability and attraction to young, skilled workers, is in an enviable position to streamline and support research and development of direct renewable energy, employment and economies that do not rely on coal or gas production technology.

The development of renewable and genuinely regenerative energy industries and projects is where the Australian government should focus its energy in order to meet carbon reduction targets, protect our oceans, and benefit all Australians over the long term.

1. The details of our submission

Terms of Reference relevant to this part

- a) the environmental benefits and impacts of exporting and importing carbon dioxide streams for the purpose of sub-seabed sequestration

(i) Direct risks to the ocean and its surrounds

Increased greenhouse gas production, as we know, contributes to ocean warming. Industries that continue to produce high levels of CO₂ and wish to store a percentage of these



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emissions, without addressing the root cause or the sequential systemic (Scope 3) problems of their production are continuing to negatively impact the environment.

Storing a percentage of the CO₂ from continuing high CO₂-producing emission energy production is providing a 'free (or subsidised) ticket' to continue operations detrimental to the ocean and the environment, and is contrary to the intent of The London protocol. As stated by Fredrik Haag, Head, Office for the London Convention and Protocol and Ocean Affairs at the IMO: "**that reduction of CO₂ emissions at source should be the primary focus, and provisional application of the amendment should not be seen as a substitute for other measures to reduce CO₂ emissions...**"

(ii) Assessment of environmental risks and aspects of any CCS project

"...CCUS technology and its implementation faces geographical, environmental, social, and political challenges. A sustainable approach is needed to look beyond the future, identify key risks and mitigations to the challenges identified for a feasible use of CCUS technology." ²

We are aware of risk assessment processes already in use. Our concerns include; are these adequate, and importantly, are government representatives able to enact critical, independent CCS project assessments?

A 2018 presentation by Barker et al³ discussed a set of improvements to legislation to allow more ready transition of approval processes for CCS – including a 'knowledge gap' in government. Acknowledging that CCS has been discussed for several years, are government agencies independently knowledgeable to enact legislation to assess projects; or are they relying on the guidance of CCS industry proponents? (as seemed the case in the aforementioned presentation). Too often this scenario is seen in government, resulting in rushed decisions that are not independent, nor based on critical thinking.

A few of our concerns include:

- Is the proponent reputable, with a solid track record of sound infrastructure works and monitoring, reporting and rectification systems?
- Is there a risk to remaining fragile ecosystems in the process? Marine mammals, many fish species and some invertebrates communicate using sound to find mates, search for prey, to avoid predators and hazards, and for navigation. Risks that threaten this behaviour may involve initial structural placement or ongoing operations such as seismic surveys and lighting. Research into sound impacts on the behaviour of undersea creatures is still evolving.
- Seabed and local land environment disruption and/or damage through seismic blasting, constructing pipelines, shipping and infrastructure upgrades or

² Alliance, 2022, CCUS Technologies - Can they mitigate climate change? Environmental, Social & Governance (ESG) risk briefing

³ Barker, Mendes Da Costa, 2018 'The CarbonNet Project and its Regulatory Journey – an overview': Earth resources, Vic Government



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development, or dredging to allow for increased shipping and direct collision with ocean mammals.

- The potentially fatal release of CO₂ directly into the sea through transportation or leaks and its impact on sea life, and to people.

We need to understand the real risk of CCS projects to marine life before we can make informed risk assessments: to take the precautionary approach.

What is the risk of inadvertent by-product, spills or fugitive emissions, and are proposed mitigation strategies more than adequate?

We note the 2021 Age⁴ and 'Boiling Cold'⁵ articles referring to a report by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) that ordered Exxon/Mobile 'plug 180 wells, dismantle ten platforms and tackle life-threatening corrosion', 'concluding that a series of failures to take reasonable steps to mitigate the risk of fire or explosion led to the worker being hurt. Derrick O'Keeffe, head of the regulator's safety and integrity division, also found employees on the rig were worried that speaking out about safety concerns would put their jobs on the line'.

There is no such thing as a fully safe industrial outfit. Clearly in the above cases, negligence, cost cutting, poor oversight and a toxic workplace contributed to an unsafe outcome. Even in apparently well-prepared projects, such as in the pilot of the brown coal to hydrogen project, the Transport Safety Bureau (Australian Government) reported that the acclaimed Japanese prototype transport ship, Suiso Frontier, suffered an onboard hydrogen plume⁶.

Are crew members, local populations and ocean life worth the risk for CCS/CCUS projects that do not directly address climate change? We believe not; and that using the precautionary principle to deny such projects is consistent with The London Protocol.

Supporting the expansion of Australian carbon credit units (ACCUs) through tidal reinstatement⁷ and other projects that support mangroves and other coastal vegetation to continue sequestering carbon is one relevant and important avenue for increased research and development, relevant to protecting our oceans.

- (iii) To fully assess environmental benefits and impacts, the whole end to end concept of proposals involving CCS should be taken into account, including not only the realistic CCS outcomes vs overall production, but also the product being manufactured.**

Should we further risk the health and wellbeing of our oceans through a focus on technologies and products that may not deliver what we need? For example, again regarding the use of black coal hydrogen technologies that rely on CCS:

⁴ The Age, 2021, [Culture of fear on Esso Bass Strait oil rig in lead-up to 'flash fire' \(theage.com.au\)](https://www.theage.com.au), accessed March 12, 2023

⁵ Milne, 2021, [ExxonMobil Bass Strait maintenance & decommissioning blasted \(boilingcold.com.au\)](https://boilingcold.com.au), accessed March 12, 2023

⁶ Australian Transport Safety Bureau, 2022, [Gas control equipment malfunction on board the gas tanker Suiso Frontier at Western Port, Hastings Victoria on 25 January 2022 | ATSB](https://www.atsb.gov.au) accessed March 12, 2023

⁷ [Towards Blue Carbon Australian Carbon Credit Units - Blue Carbon Lab](https://www.bluecarbonlab.com.au) website, accessed March 14, 2023.



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In 2021, the mining subsector contributed 19% of stationary emissions in the stationary energy (excluding electricity) sector. Nearly half (49%) of the emissions came from coal mining and the rest from other mining. The energy subsector contributed 26% of stationary emissions in the stationary energy (excluding electricity) sector. Emissions from this subsector are the result of energy used in the extraction and liquefaction of natural gas, other gas extraction and the manufacture of solid fuels.⁸

Potential projects seeking to continue extractive industries that continue to utilise high levels of energy and output high levels of emissions to produce a so called 'alternative/green energy' product does not, in our view, meet the intent of The London Protocol.

By way of hydrogen take up, Advisian notes that neither of these sectors is seeking transformation to the use of hydrogen just yet "...the adoption of BEV is still likely to be favoured (over hydrogen) by the industry until the successful application of this technology can be demonstrated."⁹ Even green hydrogen faces challenges with high water use in production, and it has a lower energy density than other emerging renewable fuels.

Further, "The European Commission assume limited if any role for CCS in hydrogen provision, while in the UK its application varies across scenarios considerably. This reflects concern about residual emissions from capture and fuel supply stages of the CCS hydrogen life cycle in the context of constrained carbon budgets"¹⁰.

To risk the wellbeing of our oceans by focussing on CCS to support projects that are known to utilise high levels of energy and produce high levels of carbon, and may not benefit or appeal to Australian companies to reduce carbon emissions at the root source, is not in the best interest of the environment, or Australia as a whole; and not consistent, we believe, with The London Protocol.

(iv) CCS, while increasingly widespread, as yet doesn't convince in its global success rate or cost/benefit to produce environmental outcomes

There is a strong risk of CCS, and CCUS "being marketed as a 'zero-emissions' solution with a wrong perception or misuse of the technology as a license to ramp up emissions."¹¹

There is significant social investment into combatting climate change. The social license for these projects is lacking, and the public has not been well informed of the technology, its aims, cost and risks. A relevant example is the lack of local consultation and information regarding the current Standing Committee. Much more balanced information to create awareness is needed, before people become aware of projects by default, or through mishap. "The public has also a critical perception of the widespread implementation of CCUS. According to a study done by Align CCUS Eu, public awareness of CCUS in the world is considered as lacking. The public is uncertain about CCUS, what it entails, and has a negative

⁸ Advisian, 2022, 'Stationary energy (excluding electricity) - mining and energy technology and efficiency opportunities'; Department of Climate Change, Energy, the Environment and Water'

⁹ Ibid, p.5.

¹⁰ Ahmed Abdulla *et al* 2021 *Environ. Res. Lett.* **16** 014036 DOI 10.1088/1748-9326/abd19e

¹¹ Alliance, 2022, CCUS Technologies - Can they mitigate climate change? Environmental, Social & Governance (ESG) risk briefing



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perception towards it. People tend to reject large infrastructure like CCUS being built near them because of the perceived risks outlined above.”¹²

Not all projects are successful in capturing carbon. “The European Commission assume limited if any role for CCS (in hydrogen provision), while in the UK its application varies across scenarios considerably. This reflects concern about residual emissions from capture and fuel supply stages of the CCS hydrogen life cycle in the context of constrained carbon budgets”¹³.

“The net reduction of emissions to the atmosphere through CCS depends on the fraction of CO₂ captured, the increased CO₂ production resulting from loss in overall efficiency of power plants or industrial processes due to the additional energy required for capture, transport and storage, any leakage from transport and the fraction of CO₂ retained in storage over the long term.”¹⁴

Results of actual carbon capture vary enormously, in part depending on whether CCS projects support industrial, enhanced fossil fuel extraction, fuel processing of different fuel types, at what stage of production and capture, the size and scope of the production, technology/expertise and the carbon capture storage site. “Some applications of CCS in industries where emissions are hard to abate (eg cement, fertilisers and steel production) CCS could be an interim solution” ...” Current projects usually target 90% capture at peak capacity: and most have failed to meet this target, including the Gorgon project off the coast of Western Australia, underachieving by about 50% over its first five-year period. .¹⁵

Deployment has also been slower than predicted, with sites in development in 2010 with a potential capacity of 150Mt a year ultimately resulting in just 39Mt by 2020 – this is seen by Abdulla, 2021, as highlighting some of the major barriers to deployment at any scale.

Abdulla et al’s 2021 research found that “projects that propose more extravagant plans to improve economies through employment are those that are expensive, high-profile, and high-risk—the same conditions that lead to promises for substantial government incentives yet frequently fail. Of the 14 most expensive projects as measured by their original budget estimates, 13 were abandoned...”¹⁶

Due diligence by well informed, skilled, independent professionals/committees using comprehensive, tailored assessment frameworks, while essential, will still likely result in a failure rate, as despite an expected increase in technology and skill, some projects will fail, underperform and over cost, creating liabilities.

Term of Reference relevant to this part

- d) the interaction of the proposed amendments with greenhouse gas inventories and regulatory and reporting streams.

¹² Alliance, 2022, CCUS Technologies - Can they mitigate climate change? Environmental, Social & Governance (ESG) risk briefing

¹³ Ahmed Abdulla, Ryan Hanna, Kristen R Schell, Oytun Babacan and David G Victor, December 2020

¹⁴ IPCC, 2005, Special Report Carbon Dioxide Capture and Storage Summary for Policymakers A Special Report of Working Group III of the Intergovernmental Panel on Climate Change

¹⁵ Robertson, Bruce: September 2022, “Carbon Capture: CCS | CCUS | CCU”; Gas/LNG Analyst, Institute for Energy Economics and Financial analysis [CCUS-CCS-powerpoint - IEEFA-September 2022.pdf](#)

¹⁶ Ibid Abdulla.



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Greenhouse inventories show (March 2019 – 2022) a continued over time, upwards trend in industrial emissions.¹⁷ This needs to be dealt with, not through creating additional emissions and then potentially storing (a percentage of) the CO₂, but by addressing existing emissions.

Bruce Robertson, Gas/LNG analyst, Institute for Energy Economics and Financial analysis¹⁸, analyses the predominant uses of CCS relating to energy pre, during or post production. He speaks of enhanced oil recovery (EOR) CCUS, where carbon is sold to fill depleted oil or gas wells, in the process pushing more oil or gas from the wells, then stored. Robertson's view is that "...enhancing oil production increases carbon emissions, negating CO₂- EOR as a climate solution" and that currently 73 per cent of CCS projects(capturing 39 million tonnes of carbon per annum) fall within this use.

Clearly, not all CCS projects are anywhere near equal. How will CCS outcomes from black coal to hydrogen, or extractive industries that rely on pumping carbon to near depleted reservoirs to extract remaining fossil fuels, be reported against greenhouse emissions and targets?

We submit that reporting must be detailed and transparent throughout various CCS projects, including at what point in the process they are aiming to extract carbon – pre, during or post carbon production; cost per outcome, success/failure rates, breaches or risks identified, their impact, and any rectification or penalties as a result.

Greenhouse reporting for any CCS project must be transparent and identifiable through all stages of the project.

The proposed Australian Government Guarantee of Origin (GO) scheme may interact with or support this approach, in its aim to:

- provide a mechanism to track and verify emissions associated with hydrogen and other products made in Australia
- provide an enduring mechanism for renewable electricity certification which could support a variety of renewable energy claims.¹⁹

Importantly, adequate funding must be allowed for independent monitoring, recording and scrutiny of identifiable emissions outcomes.

(v) Reporting and legislation should be consistent with state legislation, and map a comprehensive, clearly delineated federal/state plan of action to consistently legislate, monitor and ensure rectification (where possible), rehabilitation, and relevant penalties for breach.

We are aware of legislation that regulates CCS projects in Commonwealth waters, the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (**OPGGSA**); and that the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) is

¹⁷ National Greenhouse Gas Inventory Quarterly Update: March 2022, [National Greenhouse Gas Inventory Quarterly Update: March 2022 - DCCEEW](#). Accessed March 10, 2023.

¹⁸ Robertson. Bruce: September 2022, "Carbon Capture: CCS | CCUS | CCU"; Gas/LNG Analyst, Institute for Energy Economics and Financial analysis [CCUS-CCS-powerpoint - IEEFA-September 2022.pdf](#)

¹⁹ [Guarantee of Origin scheme - DCCEEW](#), accessed March 10, 2023



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also relevant to CCS activities, in federal or state and territory jurisdiction; and that EPBC Act approval will be required where CCS projects concern matters of national environmental significance.

While some of the following aspects currently appear to apply to projects that seek carbon credits (ACCUs)²⁰, we support legislation that includes provision to monitor, record and act on:

- CCS end to end process (such as emissions from mining of source materials (eg coal) or other operations, pre-production, production, and post production emissions and any outcomes
 - Reliable cost/benefit figures, including an agreed method to assess the potential cost of marine life loss
 - Independent risk and safety assessments, mechanisms, planned mitigation and action relevant to the specific setting of the project
 - Trusts, bonds and penalties.
- ACCUs should not be granted for new CCS projects that intend to continue to produce CO₂. In our view, as stated, these projects should not be granted approval to succeed, as contrary to the intent of the London Protocol agreement, or any other.

We support the intent of the Queensland, Victoria and South Australian legislation, that does not provide project owners with an indemnity for leakage post-closure of the CCS project. Why should taxpayers, and ultimately ocean life, suffer the cost of projects that are not designed to last?

- Importantly, adequate funding must be allowed for independent monitoring, reporting oversight and capacity to enforce immediate action where projects fail.

²⁰ Rogers, Rogers, Vaughan, Langford, Audreyev, 2022: [LATEST THINKING](#) > CCS IN AUSTRALIA - A LEGAL GUIDE