



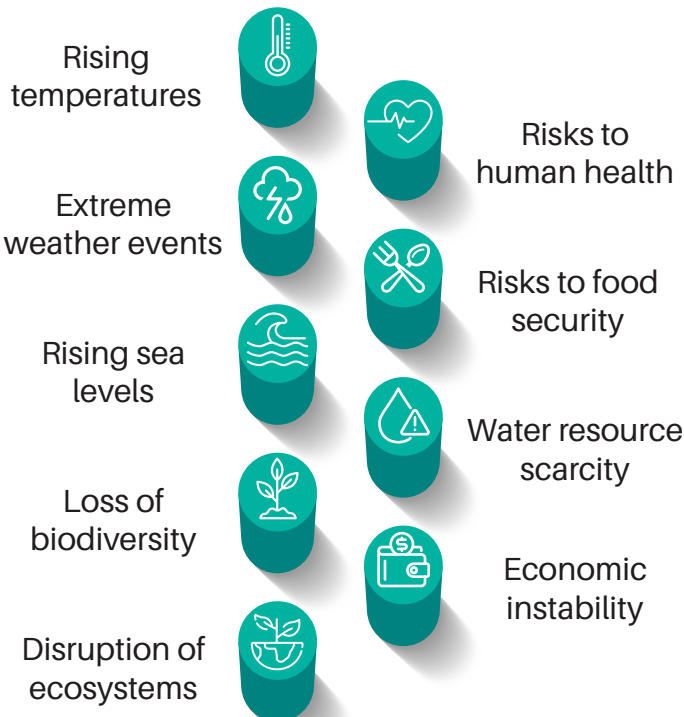
MURCHISON GREEN HYDROGEN

Version 2.0 | September 2024

Minimising Environmental Impact in the Fight Against Climate Change

A World in Climate Crisis

Climate change is one of the most pressing and challenging issues in the world today. Significant, lasting changes in the Earth's climate patterns are having devastating consequences including:



A Global Solution for a World-wide Problem

The UN Climate Change Conference (COP21) took place in Paris in 2015. At this conference, 196 parties signed the legally binding international treaty for taking action on climate change. Australia was one of the signatories.¹

COP28 took place in Dubai in December 2023. This was the largest attended conference yet with over 150 heads of state. 117 countries agreed to triple global renewable energy capacity by 2030 and double the annual rate of energy efficiency improvements within the decade. These targets are vital for keeping the global climate goal within reach.²

Climate change is assaulting many aspects of the great Australian way of life.

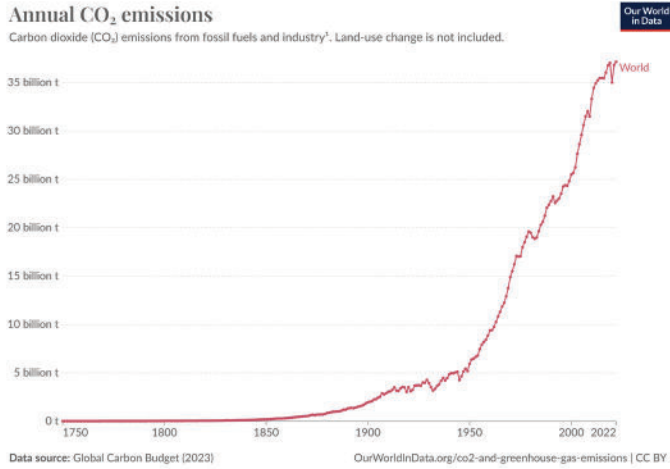
- Mission Zero: How Today's Climate Choices will Reshape Australia. Climate Council of Australia, 2023.

¹ [United Nations Climate Change](#) | [Department of Climate Change, Energy, the Environment and Water](#)

² [World Economic Forum](#)

The Impact of Fossil Fuels

Fossil fuels make up more than 80% of the world's energy. Carbon emissions from the burning of fossil fuels are the biggest contributor to climate change. The greenhouse gases released into the atmosphere by these emissions cause excess heat to be trapped. This in turn causes global warming.



1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Per capita, national, historical: how do countries compare on CO₂ metrics?³

“At today's level of around 1.2°C of global warming, we are already at risk of triggering abrupt and irreversible changes in the climate system.”

– Mission Zero: How Today's Climate Choices will Reshape Australia. Climate Council of Australia, 2023.

Global warming is causing widespread, rapid, and irreversible changes to the climate. Many of these changes are already evident within our communities and around the world.

Impending Change Requires Urgent Action

Climate change is negatively impacting our planet faster than predicted. Global warming is currently expected to exceed the agreed target maximum of 1.5°C well before the end of the century.

The Future: Green Energy

Green hydrogen is a clean alternative to fossil fuels (such as coal, oil, and gas). It is produced by splitting water into hydrogen and oxygen using energy exclusively generated from renewable energy sources.

The Murchison Green Hydrogen project will have a generation capacity of approximately 6 gigawatts of green energy from onshore wind and solar. This will drive 3GW of electrolysis and produce approximately 1.9 million tonnes per annum of green ammonia.

When used by our overseas offtake partners to replace fossil fuels, the green hydrogen we produce will lead to the reduction in approximately 5.3 million tonnes of carbon dioxide (CO₂) being released into the global atmosphere each year.

“Australia stands to prosper in a world with lower emissions. This sun-drenched, windswept land has the potential to generate large amounts of renewable energy... Australia has potential to produce and export clean energy and to become a low and zero emissions manufacturing and processing hub.”

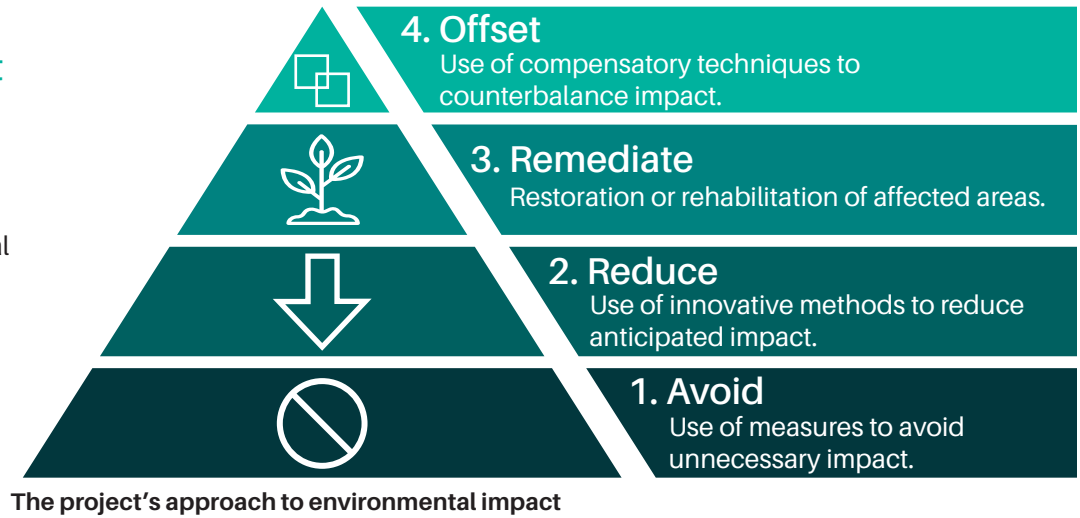
– Targets, Pathways and Progress. Climate Change Authority, 2024.

³ [Hannah Ritchie, Pablo Rosado and Max Roser \(2023\)](#)

Environmental Impacts of the Project

We are committed to realising the project’s contribution to global decarbonisation, and we are equally committed to minimising impacts on the local natural environment.

The project’s design has been developed on the mitigation hierarchy.⁴



Environment Survey Program

An extensive program of environmental surveys and studies has been undertaken over the past 2 years. The data collected from these surveys has been, and will continue to be, used to re-design the project infrastructure layout to reduce impacts to local environmental and heritage values.

Data collected through the environmental surveys will inform the Environmental Review Document (ERD) and will ensure the Environmental Protection Agency (EPA) has all of the information needed to comprehensively assess the project.

Environmental study	Status
<p>Terrestrial Fauna, Flora and Vegetation</p> <p>On site surveys have been conducted. These ensure threatened and priority species are identified and can be avoided wherever possible.</p>	In progress – due for completion Q3 2024.
<p>Marine Fauna, Benthic Communities and Habitats</p> <p>Surveys of marine-based fauna, plants, organisms and habitats were conducted using desktop research and underwater cameras.</p>	In progress – due for completion Q3 2024.
<p>Noise Impact Modelling</p> <p>Data from onsite and underwater noise monitors has been collected. This data will be used to inform a comprehensive noise model and impact assessment.</p>	Noise model developed. Data being analysed.
<p>European Heritage Study</p> <p>A study of European heritage sites and shipwrecks has confirmed there are no sites within the development envelope.</p>	Complete and reporting underway.
<p>Water Quality Monitoring</p> <p>Water was collected and samples analysed over a 12-month period (Jan 2022-Jan 2023). Datasets include depth, temperature, salinity, turbidity, nutrient levels, algae, and metals. The data will inform further modelling to assess any water quality impacts resulting from construction and operations.</p>	Complete and reporting underway.

⁴ [Department of Climate Change, Energy, the Environment and Water \(DCCEEW\)](#)

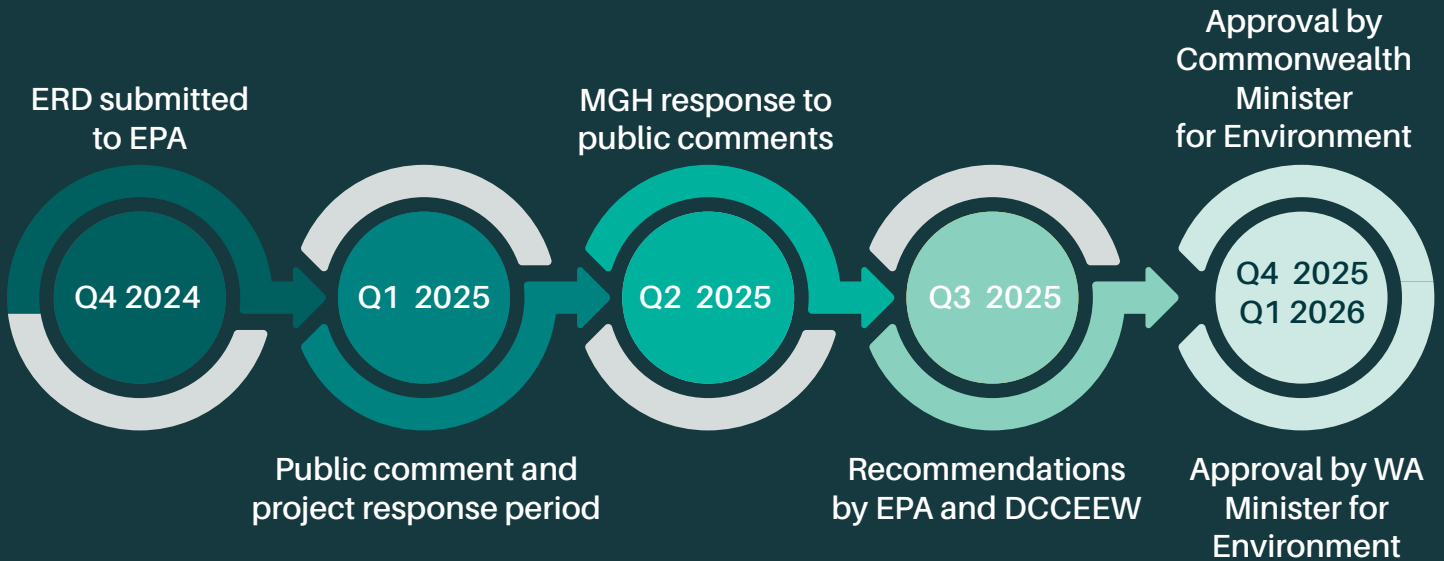
Environmental study	Status
<p>Marine Sediment Quality</p> <p>Sediment collection undertaken and analysed. A hydrodynamic model will be developed and will demonstrate the dispersion of sediment under different conditions.</p>	<p>In progress.</p>
<p>Hydrology (Flooding) Study</p> <p>Studies have been conducted to assess onshore environmental flows and risk of flooding, to inform drainage and infrastructure design.</p>	<p>Complete and reporting underway.</p>
<p>Air Quality Study</p> <p>Studies have been conducted to record the baseline air quality. Project emissions have been modelled to determine the extent of any change to the baseline.</p>	<p>Complete and reporting underway.</p>
<p>Odour Study</p> <p>Studies were conducted to model the extent of any odour that may be emitted from the project during construction and operation.</p>	<p>Complete and reporting underway.</p>
<p>Traffic Study</p> <p>Studies are being conducted to assess the impact of construction traffic on the local and regional road network. These investigations will also inform planning approval requirements.</p>	<p>In progress – due for completion Q4 2024.</p>
<p>Marine Modelling</p> <p>A study is underway to assess the extent of any impact on the marine environment from the project. The study is based on modelling potential impacts from marine infrastructure and brine discharge from the desalination plant.</p>	<p>In progress – due for completion Q4 2024.</p>
<p>Introduced Marine Species Assessment</p> <p>A study is underway to record the presence of any introduced marine species. This study will inform the management of marine operations.</p>	<p>In progress – due for completion Q4 2024.</p>
<p>Contaminant Fluxes to Marine Water Study</p> <p>Contaminant fluxes refer to the rates at which contaminants move through a specific area or volume into an environment. This study will determine the extent of any impact from the project on land to the marine environment.</p>	<p>In progress – due for completion Q4 2024.</p>
<p>Coastal Processes</p> <p>Studies have been conducted to record the baseline air quality. Project emissions have been modelled to determine the extent of any change to the baseline.</p>	<p>In progress – due for completion Q4 2024.</p>

The findings from each of these studies will enable the Murchison Green Hydrogen project design team to apply the environment management principles. This will enable avoiding impacts where possible, minimising as much as possible and offsetting as a last choice in the final project design.

Environmental Approval

The project will submit an ERD, containing the required information from all of the environmental surveys to the EPA. This submission will be open to comment during the four-week public review period.

The EPA, an independent body, will report its recommendations to the Western Australian (WA) Minister for the Environment. A report on matters of national environmental significance will be sent to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) who will then provide a recommendation to the Commonwealth Government Minister for the Environment. State and Commonwealth Ministers will both need to provide final environmental approval for the project to proceed.



Want to know more?

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