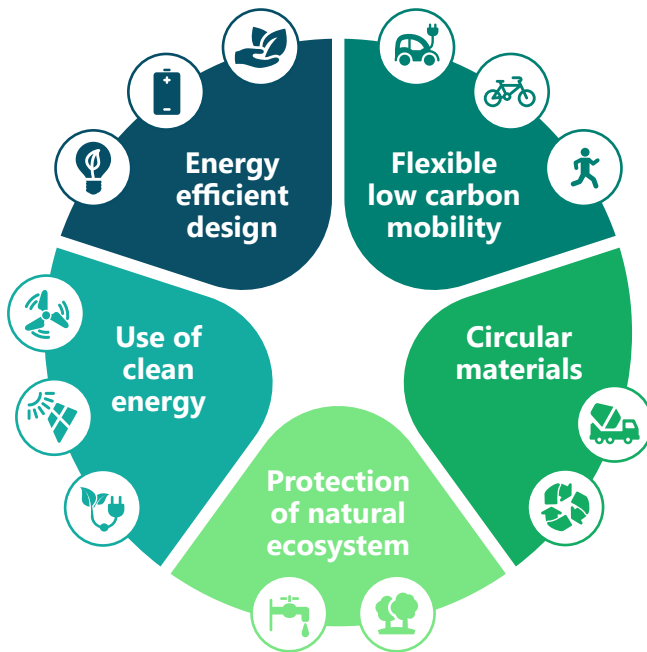


What is Net Zero?



Greenhouse gas emissions are gases released into the atmosphere that trap heat, contributing to the greenhouse effect and climate change.

Achieving net zero means that any greenhouse gases released by human activities are offset by reducing and removing emissions to achieve a balance in the atmosphere.



Promotion of public transport, cycling and walking as well as use of electric vehicles and provision of charging stations

Use of sustainable and low-carbon materials in construction, including recycled materials or low-emission concrete

Implementation of waste reduction and/or recycling programs to minimise landfill waste, reduce use of potable (drinking) water where possible and conservation of biodiversity

Using renewable energy sources such as solar and wind during construction and operation

Implementation of energy-efficient designs and technologies to reduce energy consumption including LED lighting and high-efficiency heating and cooling systems

At Main Roads WA, our approach to net zero is driven by the following:

Climate Change Act 2022

At a national level, the Commonwealth *Climate Change Act 2022* legislates the reduction of Australia's net greenhouse gas emissions to 43% below 2005 levels by 2030 and to zero by 2050.

The Climate Change Authority's 2023 Annual Progress Report highlighted that Australia is not yet on track to meet its 2030 emissions reduction target.

Australia's greenhouse gas emissions were 467 million tonnes in the year ending June 2023, an increase of four million tonnes on the previous year.

WA Climate Policy

The Western Australian government has a climate policy which sets a target for Western Australia to be net zero by 2050.

Net Zero 2050 Transition Roadmap

Main Roads WA has released a Net Zero 2050 Transition Roadmap that aligns with both the Commonwealth and Western Australian targets and outlines the strategy for Main Roads WA to become net zero by 2050.

Why is it important?

Climate change impacts are being felt globally, with more frequent and severe droughts, heatwaves, high-risk bushfire weather, extreme rainfall events, and flooding. Reaching net zero will help limit global warming and its resulting impacts.



Greenhouse gases include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and fluorinated gases.

To achieve net zero, Main Roads WA has a **net zero roadmap**. Big changes are needed to achieve this.



You may wish to think about the following net zero questions:

Will the solution result in more vehicles on the road or less?

Will the solution encourage people to walk or cycle instead of drive?

Will one solution need more concrete and steel than other project options?

Which solution will have the least greenhouse gas emissions during operations?

What are the most significant contributors to greenhouse gas emissions during a project's construction and operation?

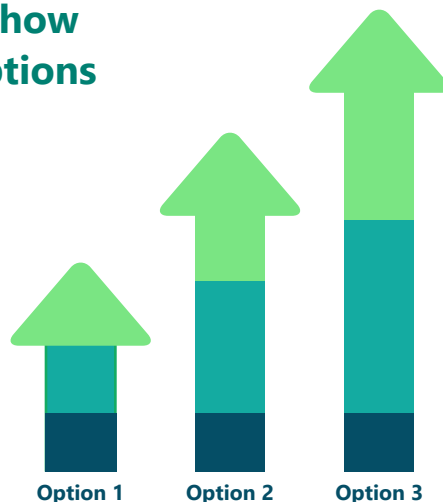
- The type and size of project being built
- Volume and type of road users
- Construction materials (eg. steel and cement)
- Transport of materials and waste to and from site
- Use of construction vehicles, equipment and machinery

The most important decision we can make to reduce greenhouse gas emissions is the option that we select.

An illustration of how three different options might stack up

Total greenhouse gas emissions for each option

-  Number of **vehicles and machines** needed
-  Amount of **materials** needed
-  Number of **road users** once complete



How do we consider reducing emissions when planning a project?

Transport is a major contributor to Australia's total greenhouse gas emissions, contributing 21% of Australia's emissions in 2022. For projects like Orrong Connect, we can reduce greenhouse gas emissions by considering the following aspects:

Scale of the solution

The larger and more complex the design, the more materials and transport are needed, the more waste is generated, and the more construction vehicles and equipment are needed.

All of these increase greenhouse gas emissions.

Material selection

The type and quantity of materials required can significantly impact carbon emissions.

Materials such as concrete and steel have a high carbon footprint.

Carbon footprint can be reduced through use of alternative materials, materials with recycled content (crushed concrete, plastic, reclaimed asphalt pavement), and by reducing the amount of materials used.

Sustainable modes of transport

Facilitating the use of sustainable transport can lead to long-term behavioural changes.

When more people use sustainable modes of transport such as electric vehicles, public transport, cycling, and walking, the demand for fossil fuel-driven transport decreases, reducing emissions.



The volume of carbon emissions is an important criterion in the decision-making at each stage of the project.