Evaluating whole-of-life carbon emissions

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De-carbonising Transport - May 2021

WAKA KOTAHI NZ TRANSPORT AGENCY

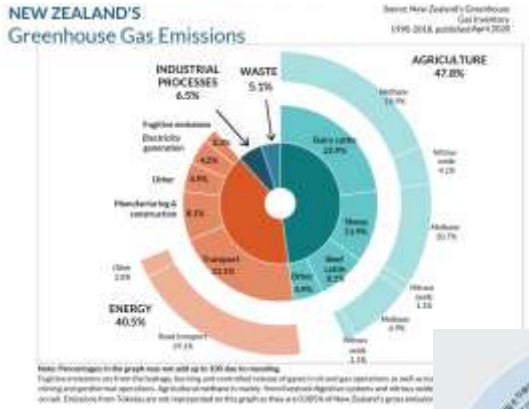
AECOM

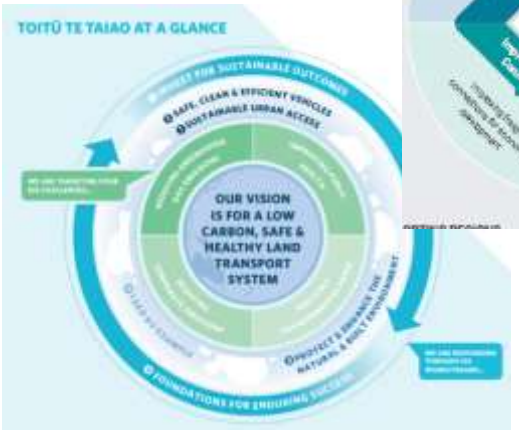
New Zealand Government

Setting the scene

Climate Change Mitigation

- Climate Change Response (Zero Carbon) Amendment Act 2019
  - Net zero GHG emissions by 2050
- RMA Amendment Act 2020
  - allow local authorities to consider the effects of GHG emissions
- COVID-19 Recovery (Fast-track Consenting) Act 2020
  - Consent applications must be assessed to whether the project contributes to NZ efforts to mitigate climate change
- GPS 2021 – (Climate change 1 of 4 strategic investment priorities)
- Toitū Te Taiao, Our Sustainability Action Plan



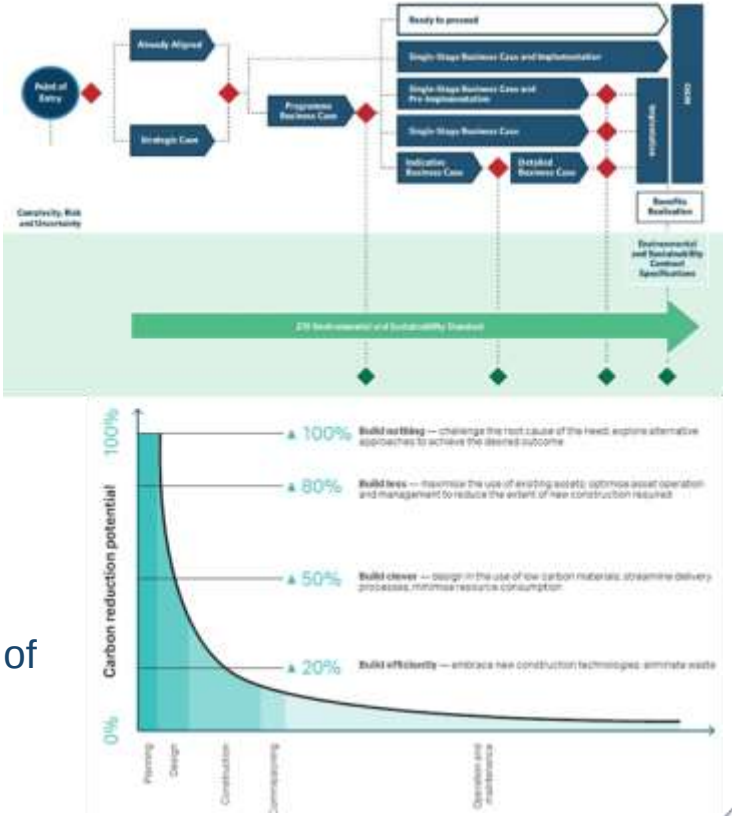


Work to date

For project in the business case & implementation phase

- Sustainability Rating tools (Greenroads and ISCA)
- Resource Efficiency Policy
- Specifications (P47)
- Tools
  - VEPM
  - ISCA materials calculator

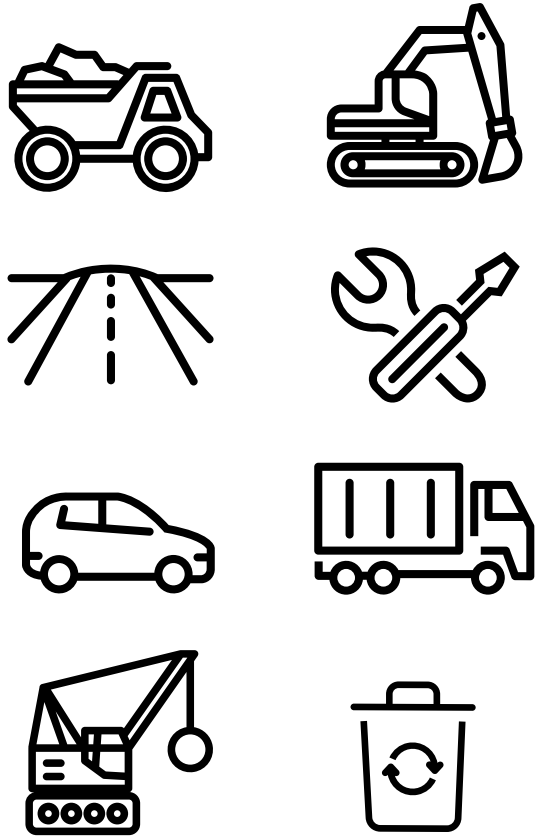
- To date there is no standardised approach for development of infrastructure carbon footprints in NZ



What it covers

Climate Change Mitigation

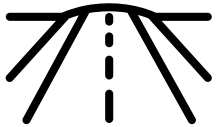
- **Construction Emissions**
  - Emissions from construction materials (embodied emissions) and construction activities
- **Operational Emissions**
  - Emissions from operational energy use and maintenance activities
- **Enabled Emissions**
  - The change in emissions from transportation use resulting from the work
- **End-of-life Emissions**
  - Decommissioning at the end of the service life, including waste in landfill, transport of materials, and recycling of materials.

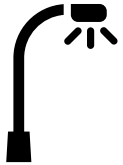


Construction Emissions

- **Construction Materials (Embodied Emissions)**
  - Material embodied emissions from extraction and manufacturing
- **Transport of Construction Materials**
  - Emissions from fuel used to transport materials to site. Generally the ‘last-leg’ of the journey from supplier to site.
- **On-site Fuel Use**
  - Predominantly from fuel used for machinery and vehicles (typically diesel) and electricity used for equipment and lighting on site.
- **Waste Materials**
  - Fuel used to transport waste materials from the site to landfill, recycling, or reuse
  - Waste disposal or recycling of the material.

Operational Emissions





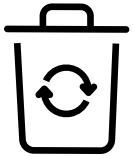
- **Ongoing Operational Emissions**
  - Ongoing electricity use e.g. for road lighting and signage
  - Ventilation for tunnels.

- **Maintenance Activity Emissions**
  - Maintenance and repair of the infrastructure activities.
  - Embodied emissions from materials used, transport of maintenance materials, on-site fuel use, and disposal of maintenance waste materials.

Enabled Emissions

- **Enabled emissions (do minimum)**
  - The enabled emissions of the transport system at a future time without change to the infrastructure.
- **Enabled emissions (option scenario)**
  - The enabled emissions of the transport system at a future time with a change to the infrastructure (e.g. the construction of a new road).
- **Enabled emissions (change)**
  - The difference in enabled emissions of the transport system as a result of the project (i.e. the option scenario minus the do minimum scenario).

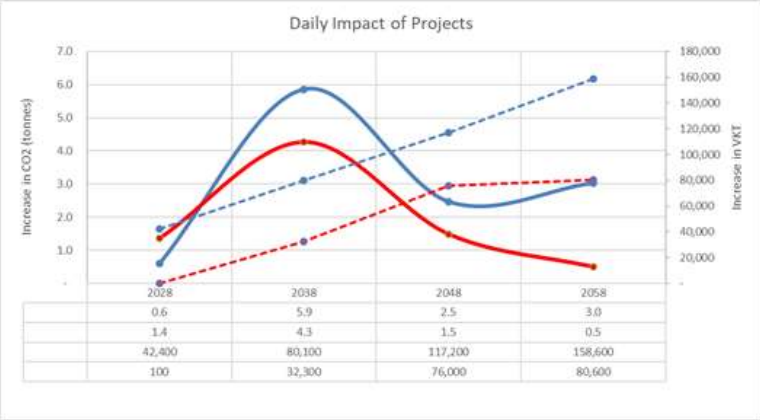
End of Life Emissions



- **Decommissioning Activity**
  - On-site fuel use for decommissioning and demolition of infrastructure
- **Transport of Waste Materials**
  - Fuel use for transportation of waste materials away from site
- **Waste in Landfill**
  - Waste to landfill (predominantly methane)
- **Reuse of Waste Materials**
  - Transportation and preparation of waste materials for reuse
- **Recycling of Waste Materials**
  - Recycling processes

Next steps

- Complete guidance for End-of-life and reporting boundaries still to be developed
- Complete and implement GHG assessment guidance, specifications and tools
- Prepare strategic baseline assessments
- Embed climate change considerations into our business case and investment decision processes
- Engage with industry, stakeholders and partners
- Support projects with their carbon assessments



Thank you

Any questions?

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