

Civil Contractors New Zealand submission to He Pou a Rangi Climate Change Commission on “2023 draft advice to the Government to inform the strategic direction of the Government’s second emissions reduction plan”

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INTRODUCTION

Civil Contractors New Zealand members carry out the majority of the NZ’s civil infrastructure construction and maintenance work. We estimate the civil construction sector carries out more than \$12 billion of work annually and employs more than 40,000 workers.

We represent more than 700 businesses. This includes more than 450 civil construction businesses, ranging from large civil construction and infrastructure companies employing thousands of staff to small earthmoving contractors and family businesses.

Principal clients our members work for include central and local government agencies, as well as private clients. CCNZ also represents more than 250 businesses that provide equipment and services to support civil construction.

Our members are the companies that carry out the physical infrastructure construction works to protect communities from severe weather events and respond if water and transport networks are impacted by disaster.

The civil contracting industry is diverse, ranging from large vertically integrated businesses with thousands of staff and their own research companies, to small specialist subcontractors, to family businesses.

In preparing this submission, CCNZ considered both the existing emissions Reduction Plan (ERP), and the Climate Change Commission’s [draft advice](#) to the Government for developing the second ERP.

We welcome the ambition reflected in the existing ERP with more than 300 actions covering transport, energy, building, agriculture, forestry, and waste.

CCNZ's objective in making a submission is working towards a second ERP that is well-informed, well-understood, recognises practical opportunities for emissions reductions and is achievable for the civil contracting industry, and New Zealand as a whole.

TABLE OF CONTENTS

Introduction	Page 1
Key points	Page 2
Include within scope horizontal construction	Page 2
Civil construction provides resilience	Page 4
Holistic approach to embodied carbon	Page 4
Materials supply chains	Page 4
Heavy machinery	Page 5
Waste	Page 7
Calculation of embodied carbon	Page 7
Full list of recommendations	Page 8

KEY POINTS

- The draft advice needs to explore achievable opportunities and proven technologies that can be applied within the timeframe available. It's essential there is discussion with industry to identify appropriate opportunities.
- The Emissions Reduction Plan currently puts the onus on a range of client groups to independently produce emissions reduction guidance for transport and water construction. This creates uncertainty for all involved.
- Civil construction provides essential services to New Zealand, such as resilience to natural hazards and the effects of climate change.
- Civil contractors have to balance obligations between reducing CO₂ emissions and delivering resilience infrastructure such as transport networks, seawalls, stopbanks and wetlands.
- A holistic approach to infrastructure emissions - to consider whole of life emissions and account for construction, operational and decommission (demolition and recycling) emissions at the same time - will help solve the above problem.

- The draft advice needs to include horizontal construction material supply chains: e.g. asphalt, aggregate, and concrete, to ensure proximate sources of materials to reduce transport “carbon miles” and remedial wear and tear on the transport network.
- The heavy machinery sector is decarbonising in many ways, but to achieve this at scale will take longer than 2030 due to unavailable, unworkable or transitional technologies.
- Avenues for heavy machinery include electricity, hydrogen, biofuels, and new fuel efficiency measures.
- Government support of innovation in decarbonising heavy vehicle fleets would help speed the lower-emissions transition.
- A particular barrier to overcome is charging and refuelling infrastructure for hydrogen and charging stations, which needs to be accessible to the fleet for change to be affordable and successful.
- Civil contractors are already recycling concrete, asphalt, aggregate, steel, and the mud/rock produced from tunnelling, from construction and demolition waste.
- However, this is isolated to areas within the country where there are facilities – we need widespread depots/facilities across the country to make this feasible.
- Better guidance, more investigation and more flexibility is needed around specifications for re-use of these materials (i.e. with transport or foundation engineering specifications).
- Closer positioning of recycling, reuse and repurposing of waste to funded sites of use, e.g. new material recycling infrastructure and cleanfill sites, will reduce “carbon miles” in terms of material transport.
- The Government should specify the use of the ISO 14064 framework of greenhouse gas accounting and verification to calculate embodied carbon in infrastructure so emissions are consistently measured.

IMPROVE CONNECTION BETWEEN ERP AND TARGETED ACTIVITIES

The second Emissions Reduction Plan will perform better if it acknowledges the needs of the civil contracting industry, and works with industry to develop a plan that acknowledges practical opportunities and supports horizontal construction companies to do what’s required to achieve New Zealand’s emissions reduction goals.

Recommendation 1: Recognise in the draft advice the key role horizontal construction plays in constructing and maintaining civil infrastructure for development, resilience and disaster response, the essential role this industry plays in New Zealand, and provide for this sector in the second ERP.

CIVIL CONSTRUCTION PROVIDES RESILIENCE

Civil contracting provides essential services to New Zealand that cannot be avoided or reduced. As a telling example, the two cyclones in early 2023 in the upper North Island saw civil contractors out in force to restore damaged infrastructure and infrastructure networks, e.g. clearing slips and building bridges to reopen transport networks and reconnect communities.

Civil contractors must be able to operate unimpeded to respond to crises and repair the water, transport and internet networks. This presents companies with conflicting obligations, reducing CO₂ emissions while also ensuring they can continue to repair critical infrastructure effectively, and deliver on New Zealand's resilience needs.

In these cases, there will be a cost in the form of lives and livelihoods if horizontal construction is forced to scale down due to the increased cost of infrastructure construction.

Recommendation 2: In line with Recommendation 1, provide for horizontal construction to continue to provide services to New Zealand, regardless of the pace of the greenhouse gas emissions reduction transition.

HOLISTIC APPROACH TO EMBODIED CARBON AND NETWORK OPERATION

Construction emissions are a small subset of whole-of-life infrastructure networks, with most emissions stemming from their operation. Considering the emissions savings from the construction and operation of transport infrastructure can allow network asset managers to best understand how to balance the emissions resulting from its construction.

Considering the issue in this way also enables further opportunities in this space, for example use of timber or construction of wetlands as carbon sinks, or construction designs and methodology that can extend the life cycle of an asset.

Recommendation 3: Continue supporting a holistic approach to infrastructure emissions accounting and policies for emissions reduction, to consider simultaneously construction and operational emissions.

MATERIALS SUPPLY CHAINS

The ERP and the Commission's draft advice largely ignores the role of the supply chains of asphalt, aggregate, and concrete into civil contracting.

These form nodal networks¹ in which the closer the supply chain to sites of delivery, the lower the transport-related costs and CO₂ emissions.

Recommendation 4: Include proximity and availability of building and construction materials supply chains within the consideration of horizontal infrastructure (and

¹ Nodal networks are those composed of points in 2-dimensional space, eg the distribution in New Zealand of schools, quarries, asphalt plants, cleanfills, and concrete plants.

other demand). Proximity of enabling infrastructure such as quarries, cleanfills and other things is often not considered, despite its proximity and availability being a critical factor in infrastructure construction works transport emissions.

HEAVY MACHINERY

P11 of the draft advice proposes “zero-emissions commercial vehicles, including vans, utes and trucks”, and a discussion is provided on P145. Heavy machinery includes trucks, excavators, loaders, dozers, scrapers, and graders.

The technologies are developing to transition heavy machinery into renewable energy sources, eg electricity and biofuels. The question is how rapidly.

Electricity and hydrogen

We advise that deployment of e-machinery in New Zealand is premature for several reasons:

- Many sites are remote; e-machinery would need to access diesel generators for recharging, defeating the emissions reduction purpose of deployment
- Charging stations and hydrogen refuelling stations are costly and still not widespread or readily available
- Machinery can operate 24/7, so staff can use it on rotating shifts. While refilling with diesel is straightforward and can be carried out ‘off-grid’, recharging with electricity is much less so, to the point of impracticality
- Overseas technologies for full hydrogen or electric power of heavy plant and equipment such as excavators or rollers are often aimed at much larger-scale operations than exist in New Zealand, and even in major international markets this technology is at prototype stage.

Lower-emissions, off-road machinery technologies will arrive in New Zealand; that is certain. However, they will not arrive within the timeframe of 2026-2030.

As matters stand, trials are underway of hybrid excavators (Komatsu working with Ventia – [read more here](#)), and of hydrogen and e-trucks.

On P145, the draft advice says: “The Government has signalled support for decarbonising this segment of the transport sector by committing to the Global Memorandum of Understanding to enable 100% zero emissions new truck and bus sales by 2040, and 30% by 2030 for Aotearoa New Zealand.”

The aim is supported, however, we caution that it is potentially unachievable by 2030.

Recommendation 5: Note the potential of electricity and hydrogen to power heavy machinery, and note this will likely take longer than 2030 to achieve at scale, particularly at remote work sites.

Recommendation 6: Support a programme of work to make charging stations and hydrogen refuelling stations more readily available

Biofuels

Some heavy vehicle fleets are fully or partially powered by biofuels and biofuel blends that contractors themselves manufacture, eg Fulton Hogan subsidiary Green Fuels. However, these efforts are undermined by uncertainty of the future of biofuels. The retraction of the Government's Biofuel Mandate implies this may now be considered a transitional technology, rendering any investments the industry has made on the government's advice and direction in this space ineffectual.

We ask the Commission to recognise the industry's achievements to date in this space, and its willingness to further innovate to ramp up future biofuels supply. But also, to recognise the risks that come with directing industries to take up certain technologies that may not serve the country well in the long term. Industry needs certainty in the long-term support and application of technologies to successfully adopt them and make large scale, long term transition.

Recommendation 7: Support innovation in horizontal construction to meet their current and future biofuels needs, as part of decarbonising heavy machinery fleets.

Recommendation 8: Provide advice on whether biofuels are going to be a permanent solution, or a transitional technology to better inform civil contractors in planning for their own transition and safeguarding their future.

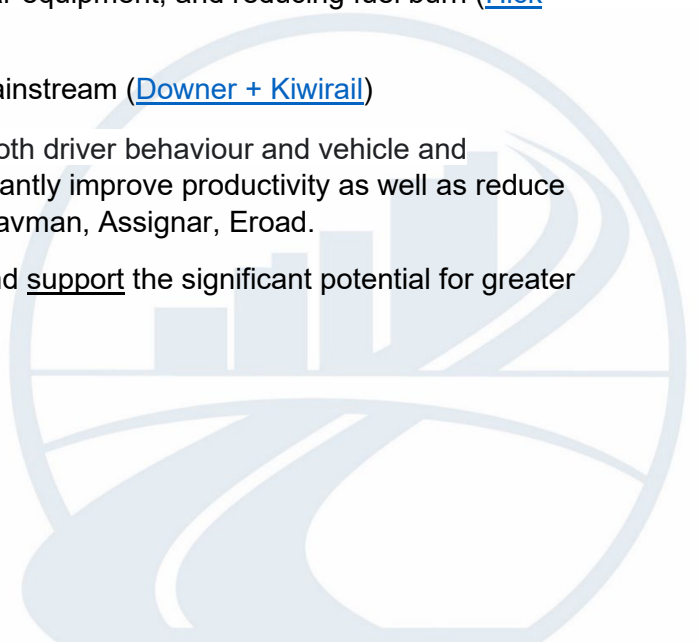
Other methods for transition

Trials underway that are likely to be game changers in reducing fossil fuels consumption include:

- Training simulators for smoothing the transition between using different types of machinery, upskilling workers on unfamiliar equipment, and reducing fuel burn ([Hick Bros, Major Oak Safety Training](#))
- Digital engineering will start to become mainstream ([Downer + Kiwirail](#))
- Telematics software (which can monitor both driver behaviour and vehicle and equipment performance). This can significantly improve productivity as well as reduce emissions. Many providers, eg Teletrac Navman, Assignar, Eroad.

Recommendation 9: Include in advice and support the significant potential for greater fuel efficiency in heavy machinery.

WASTE



The ERP and the Commission's draft advice is weighted in favour of wood and organic recycling, a narrow focus. Note that civil contractors are already recycling concrete, asphalt, aggregate, steel, and the mud produced from tunnelling, from construction and demolition waste, where appropriate and accessible recycling facilities exist.

In evidence:

- The City Rail Link Britomart contract has recycled more than 90% of waste material produced at this site, which is located under a 14,000-tonne historic post office.
- The Peacocke Northern Transfer Mains project has used a significant proportion of recycled materials in construction (including the mud from the excavation), and has diverted more than 80% of project waste from landfill.
- Construction waste recycling programmes for concrete, asphalt, aggregate, and the mud produced from tunnelling ([Taggart, CB Civil](#)).

The closer the recycling, reuse and repurposing of waste is to sites of use, eg new infrastructure, and cleanfills, the lower the transport-related costs and CO₂ emissions.

Recommendation 10: Include within the draft advice matters relating to construction & demolition waste, such as the recycling, reuse and repurposing of asphalt, aggregate, steel, and concrete, including in building new infrastructure, and including in cleanfills.

Recommendation 11: Adopt better planning and provision for proximate recycling, reuse and repurposing of construction & demolition waste to reduce the “carbon miles” relating to waste management.

Recommendation 12: Support innovation in the further development of waste recycling, reuse and repurposing technologies.

CALCULATION OF EMBODIED CARBON

A plethora of CO₂ emissions calculation tools, including for infrastructure, and, within that, horizontal construction, currently exist. It is important for civil contractors (and others) to have certainty and consistency in this space when bidding and providing advice on upcoming projects.

The government needs to select a single, fit-for-purpose international tool for embodied and operational CO₂ emissions calculations, and such already exist.

The ISO 14064 framework of greenhouse gas accounting and verification is recognised by the Ministry of Business, Innovation and employment, and it aligns with the Infrastructure Sustainability Council framework. The ISC rating tool has been adopted by Waka Kotahi NZ Transport Agency.

Recommendation 13: Adopt the ISO 14064 framework of greenhouse gas accounting and verification for calculating the embodied carbon of horizontal infrastructure.

Recommendation 14: Ensure the above is the basis for decision-making by Road Controlling Authorities, and other authorities / agencies and regulators, as regards horizontal infrastructure.

FULL LIST OF RECOMMENDATIONS

Recommendation 1: Recognise in the draft advice the key role horizontal construction plays in constructing and maintaining civil infrastructure for development, resilience and disaster response, the essential role this industry plays in New Zealand, and provide for this sector in the second ERP.

Recommendation 2: In line with Recommendation 1, provide for horizontal construction to continue to provide essential services to New Zealand, regardless of the pace of the greenhouse gas emissions reduction transition.

Recommendation 3: Adopt a holistic approach to infrastructure emissions accounting and policies for emissions reduction, to consider simultaneously construction and operational emissions.

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Thank you for your time in reading this submission. Please feel free to contact us if you would like further information around any of the points we have raised.

Sincerely,



Alan Pollard
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