Concrete New Zealand Incorporated

Submission to

NEW ZEALAND INFRASTRUCTURE COMMISSION TE WAIHANGA

on

He Tūāpapa ki te Ora
Infrastructure for a Better Future

2 July 2021

2 July 2021

New Zealand Infrastructure Commission
Level 7, The Todd Building
95 Customhouse Quay
WELLINGTON 6011

Dear Sir/Madam

HE TŪĀPAPA KI TE ORA - INFRASTRUCTURE FOR A BETTER FUTURE

Concrete New Zealand (NZ) represents a membership of more than 500 corporates and individuals who make a significant contribution to the New Zealand building and infrastructure sectors.

Concrete NZ speaks with a unified voice on behalf of the cement and concrete industry.

In line with its Strategic Charter, Concrete NZ welcomes the opportunity to provide comments on the New Zealand Infrastructure Commission Te Waihanga discussion document - *He Tūāpapa ki te Ora - Infrastructure for a Better Future.*

GENERAL COMMENTS

Concrete NZ supports the draft infrastructure strategy and suggests areas for improvement.

The New Zealand Infrastructure Commission Te Waihanga summarises the draft infrastructure strategy's vision as:

> *Infrastructure lays the foundation for the people, places and businesses of Aotearoa New Zealand to thrive for generations.*

Concrete NZ agrees with the vision and the highlighted needs for:

> *Building a better future; enabling competitive cities and regions; creating a better system.*

Concrete NZ notes that New Zealand has a significant infrastructure deficit, and that a wide range of infrastructure will be essential to delivering Government objectives, e.g., a net zero

carbon New Zealand by 2050, adaptation to the effects of climate change, and affordable housing as the country's population continues to grow.

Concrete (and its Ingredients) Are Essential to Infrastructure

Concrete is a core component of infrastructure – likewise, the ingredients of concrete, aggregates (crushed rock and sand) and cement (made of processed limestone and other minerals), are also core components.

Policy settings that enable infrastructure planning, design, and delivery where it is needed around the country must, therefore, also enable concrete manufacture, delivery and placing along with its upstream supply chain.

As such, any moves to fast-track or otherwise enable infrastructure, must also fast-track or otherwise enable the quarry sector in terms of extending the resource life of existing operations and developing new operations.

Barriers to Quarrying

Currently the quarry sector faces many obstacles to meeting a looming shortfall in aggregate supply, proximate to where it is needed. They include:

- Restrictions on access to land, e.g., the Government's policy direction of no new mines on conservation land where a significant percentage of aggregate resource is located.

- As well, development is occurring in areas of aggregate resource, thereby sterilising, or preventing access to that resource.

- Councils around the country are reducing access to river resources, often for valid reasons, increasing pressure on being able to access land-based resources.

- The Resource Management Act (RMA) system adds significant time and cost to obtaining resource consent for quarry extensions or new quarries – processes can take 10 years and cost millions of dollars.

- The draft *National Policy Statement for Indigenous Biodiversity*, as it stood during the consultation period in late 2019-early 2020, would prevent quarry development in almost all of New Zealand.

- The wetland protections in the freshwater package that came into force during late 2020 prevent quarrying in almost all of New Zealand because wetlands are very widely distributed in the landscape (noting our understanding that the Government is developing a solution).

Unaddressed, New Zealand will likely in the future be importing aggregates at greatly elevated cost and carbon footprint – at a time when the concrete sector is working hard to reduce CO_2 emissions.

Concrete and Climate Change

Refer to *Appendix A. Briefing: New Zealand Concrete Industry Emissions Reduction* for a summary of the progress the New Zealand concrete sector has made in reducing its carbon footprint. The sector is at least halfway towards a target of 30 percent emissions reduction by 2030 off a 2005 baseline, while annual production has increased since 2005.

Concrete NZ is therefore greatly concerned at the statement in the draft infrastructure strategy:

> *The construction and maintenance of infrastructure often generates substantial amounts of embodied carbon through the use of materials such as concrete and steel.* (Page 47).

Te Waihanga is urged to modify its wording to recognise the efforts the concrete sector is making to reduce emissions, and that for many infrastructure applications there is no alternative – at any cost – to using concrete.

Concrete NZ draws attention to the wording in F1.1:

> *Ensure all infrastructure projects evidence they are compatible with a net-zero carbon emission future to prevent infrastructure with a long asset life locking-in a high-emissions future.* (Page 52).

New Zealand operates an emissions trading scheme and is developing emissions budgets consistent with its commitments under the 2015 Paris Agreement. In our view, and in practical terms, New Zealand will need access to international carbon markets to be net zero carbon by 2050.

Further Insertions Needed to Highlight the Upstream Supply Chain for Infrastructure

The draft infrastructure strategy does refer to the importance of aggregates and concrete in the delivery of infrastructure, often obliquely, e.g., "supply chain disruption for essential materials" (Page 37).

Concrete NZ suggest the text is strengthened to ensure that all proposed measures for enabling infrastructure also enable the upstream supply chain, including concrete and its components.

Concrete NZ suggest inserting a 20th Action Area (page 43) – Enabling the supply chain for infrastructure.

Under needs on page 93, Concrete NZ suggest the addition of a bullet point to cover the upstream supply chain for infrastructure.

Concrete NZ acknowledge some overlap with other Action Areas, e.g., S7.3 (develop a planning system that is more enabling for infrastructure); and S7.1 (measure and benchmark infrastructure cost performance), both sections of text on page 123.

Concrete NZ thanks the New Zealand Infrastructure Commission Te Waihanga for the opportunity to comment on the discussion document - *He Tūāpapa ki te Ora - Infrastructure for a Better Future.*

Yours faithfully

CHIEF EXECUTIVE

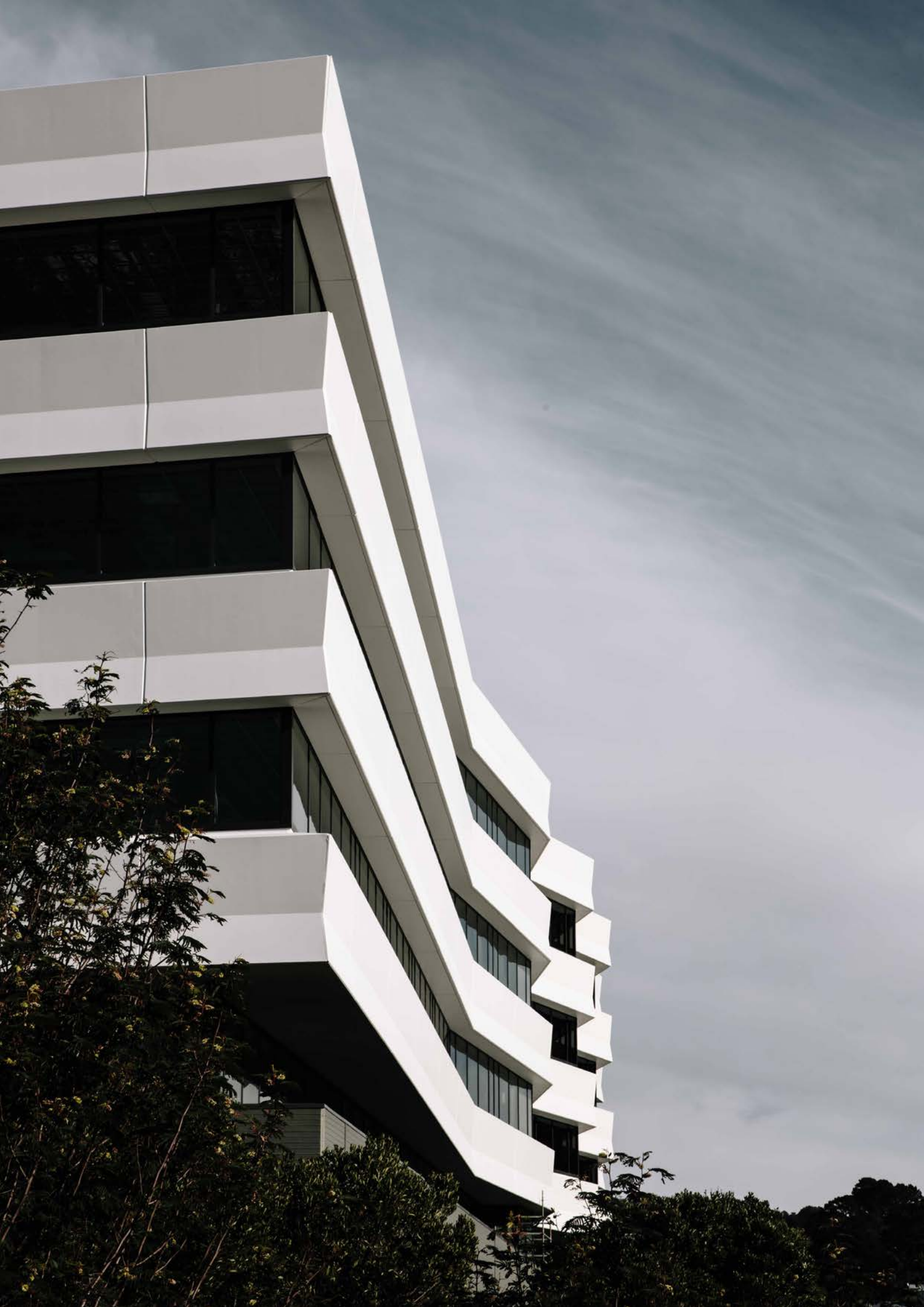
APPENDIX A.
BRIEFING: NEW ZEALAND CONCRETE INDUSTRY EMISSIONS REDUCTION

concretenz
BUILDING RESILIENCE

BRIEFING

NZ CONCRETE INDUSTRY EMISSIONS REDUCTION

JULY 2020



BRIEFING

NZ CONCRETE INDUSTRY EMISSIONS REDUCTION

The New Zealand concrete industry is halfway towards meeting its target of a 30 percent reduction in carbon dioxide emissions by 2030.

Independent sustainability consultants - *thinkstep* - confirm that emissions from cement have been reduced by 15 percent between 2005 and 2018.

ZERO CARBON ACT

Concrete NZ supports the *Climate Change Response (Zero Carbon) Amendment Act,* and its objective to ensure New Zealand plays its part in reducing Greenhouse Gas Emissions (GHG) under the Paris Agreement.

The Act gives New Zealand a clearly defined, long-term, emissions target, with an assured framework for managing the transition to a low-emissions future.

Long-term predictability in terms of policy direction is welcomed by the concrete industry, along with evidence-based decisions that deliver pragmatic emission reduction results.

MANAGED TRANSITION

Cement clinker manufacture is an inherently carbon intensive process, and cement companies are unable to reach zero carbon emissions with current technology. This is because the manufacturing process is primarily driven by the base chemical reaction resulting from the decarbonisation of limestone.

Cement manufacturing plants are capital intensive and typically operate on a twenty-year reinvestment/ upgrade cycle. Implementation of any new technologies or process changes will add significant business costs and would need to be part of a long–term investment plan.

Recommendations for a transition to a low emissions economy must therefore remain practical and achievable, be based on known and commercially viable technologies and processes, and account for raw material availability, supply chain dynamics and market demand for ‘quality’.

LOW CARBON MATERIAL

Over the past several decades the industry has been particularly conscious of its environmental impact and has implemented initiatives to reduce CO_2 emissions.

The 15 percent reduction in emissions between 2005 and 2018 was achieved through increased use of mineral addition and Supplementary Cementitious Materials (SCMs) in cement, the use of alternative kiln fuels in cement manufacture and a general shift to more efficient cement manufacturing processes.

In addition to focussing on CO_2 generating processes, the wider industry has also worked to enhance its environmental practices by diverting / recycling waste streams, including returned concrete, away from landfill and into usable construction products.

SUPPLEMENTARY CEMENTITIOUS MATERIALS (SCMS)

The increasing global use of SCMS to replace cement and therefore directly reduce embodied CO_2 makes sound ecological sense.

SCMs are derived from lower embodied energy, industrial by-products or waste materials, and can result in environmental benefits, improved concrete performance, and long-term cost advantages. Typically they are ground granulated blast furnace slag (waste from steel manufacture), fly ash (waste from coal combustion) or microsilica.

Volcanic ash (a natural pozzolan) from New Zealand's North Island Volcanic Plateau is another type of SCM. The advantage of natural pozzolans is that there is a stable local supply, meaning they have the potential to be cost competitive.

New Zealand cement suppliers are currently investigating pozzolan blended cements with around 20-25 percent cement substitution. The New Zealand cement Standard (NZS 3122) allows for up to 35 percent replacement with fly-ash or pozzolans, up to 75 percent with ground granulated blast furnace slag, and 10 percent with microsilica.

ALTERNATIVE KILN FUELS

Considerable reductions in energy use (and therefore CO_2 emissions) have been realised in New Zealand over the past decade by improving the efficiency of the cement kiln operation, a significant energy user.

New Zealand's only integrated cement manufacturer, Golden Bay Cement, uses alternative waste fuels for a substantial part of its operations and is continually examining the practicalities of increased supplementation.

- A significant proportion of fossil fuel is substituted with wood waste.
- Fossil fuel substitution with waste vehicle tyres will begin shortly.

The environmental benefits of using alternative fuels in cement manufacture are:

- the need to use non-renewable fossil fuels such as coal is reduced; and
- the recovery of energy from waste is maximised, methane emissions reduced, and landfill space optimised.

INDUSTRY VISION

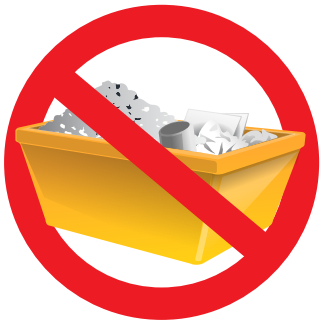
Under the Concrete NZ banner the concrete industry has developed a vision which states that by 2030 the concrete industry will be recognised as a sustainable, socially responsible and profitable participant in the construction sector, and have reduced its global warming potential by 30 percent of 2005 levels. This will be achieved through:

Supplementary Cementitious Materials (SCMs) as a cement replacement

Efficient energy sources for manufacturing & delivery processes

New technology adoption where appropriate

Recycling processes to minimise the use of virgin materials



Waste minimisation in manufacturing, delivery and construction

Engaging with local communities

ABOUT CONCRETE

Concrete is the pre-eminent global building material. It is made to exact specifications to suit site conditions, load and strength requirements, as well as the desired aesthetic. A sophisticated product, concrete requires technical expertise, quality constituent materials and modern production machinery. It is sustainable, offering tremendous durability, flexibility and resilience.

ABOUT THE CONCRETE INDUSTRY

The wider concrete industry annually produces and uses about one million tonnes of cement in New Zealand, which equates to around four million cubic metres of concrete for new residential, infrastructure and commercial construction. In total, the direct, indirect and induced economic contribution of the concrete industry is approximately $7.5 billion and supports more than 24,000 jobs.

ABOUT CONCRETE NZ

Concrete NZ is a recently formed association representing interests across the concrete industry. Concrete NZ supports industry to position concrete as the resilient construction material of choice for a modern New Zealand. This will be achieved through a consolidated voice that brings confidence, knowledge and leadership to members, industry and regulators.

FACTSHEET

NZ CONCRETE INDUSTRY EMISSIONS REDUCTION

concretenz
BUILDING RESILIENCE

The New Zealand concrete industry is halfway towards meeting its target of a 30 percent reduction in carbon dioxide emissions by 2030.

Independent sustainability consultants - *thinkstep* - confirm that emissions from cement have been reduced by 15 percent between 2005 and 2018.

thinkstep anz

NATIONAL

15% ↓
reduction in CO_2 from cement

↓11%
reduction in CO_2 from concrete

PER CAPITA

27% ↓
reduction in CO_2 from cement

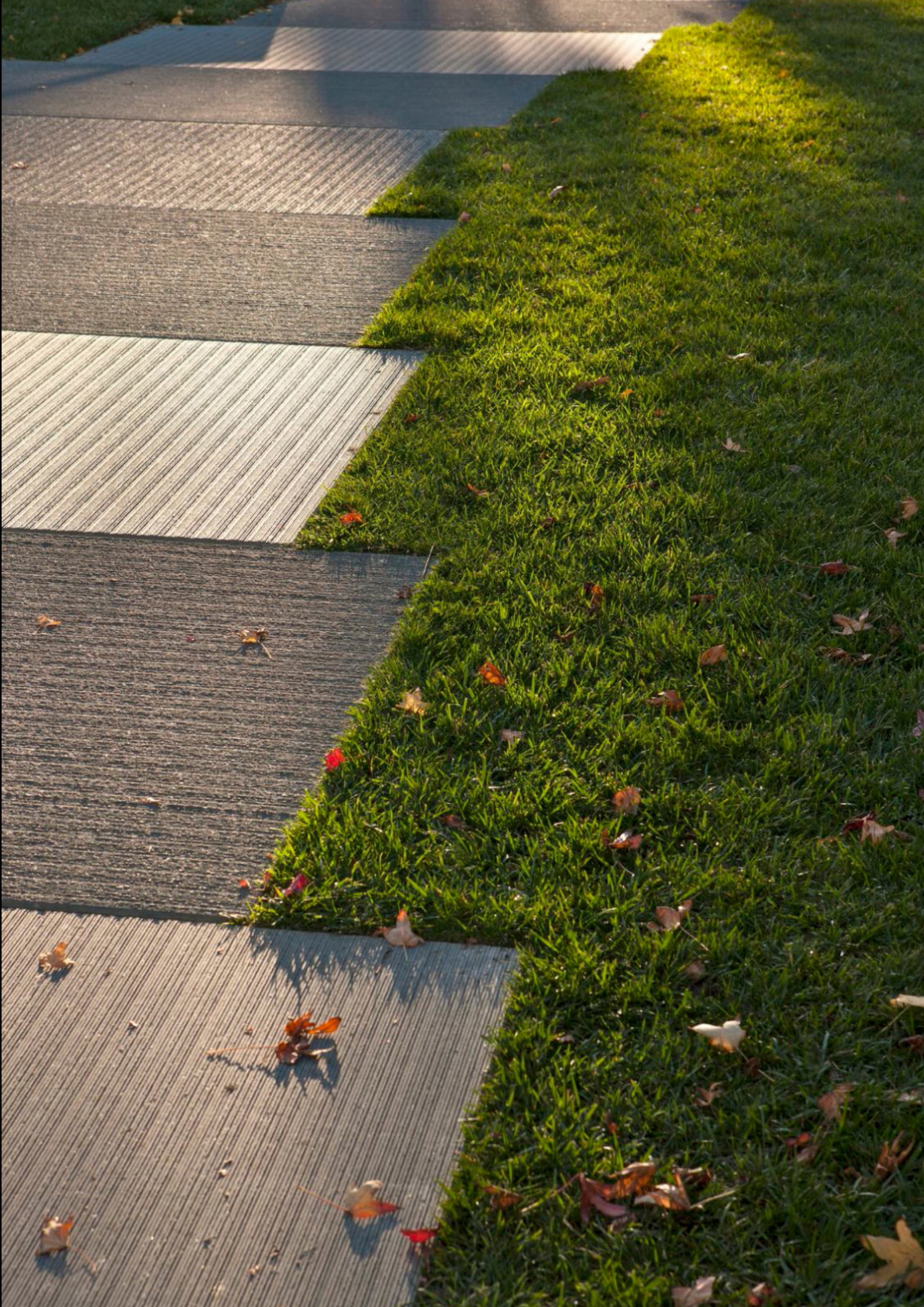
↓24%
reduction in CO_2 from concrete

PER UNIT (PER TONNE)

17% ↓
reduction in CO_2 from cement

↓21%

reduction in CO_2 from concrete



concretenz
BUILDING RESILIENCE

www.concretenz.org.nz