

Metals New Zealand submission on the Building for Climate Change Programme/MBIE discussion documents ó

- Whole-of-Life Embodied Carbon Emissions Reduction framework
- Transforming Operational Efficiency

9 October 2020

1. Introduction- Metals New Zealand supports MBIE Building for Climate Change initiatives

Metals New Zealand supports New Zealand's commitment to Zero Carbon 2050. We acknowledge that climate change represents the most significant challenge for mankind if we are to keep global temperatures below 1.5 degrees (above pre-industrial levels).

Metals New Zealand does not support the approach proposed by MBIE's Building for Climate Change (BfCC) team to addressing the challenge. We think the proposed approach is piecemeal in that it only targets embodied carbon in structures and a very limited perspective of operational emissions. Ignored is the embodied carbon in the remainder of products comprising the building; the actual construction (along with the construction waste generated; the actual operation and maintenance of the building and how the building is addressed at end of life, along with re-use/repurposing and recycling of components or landfill). Such a piecemeal approach will not enable New Zealand to reach its goal, is likely to alienate much of the sector and delay New Zealand effectively addressing emissions from buildings.

Metals New Zealand, in our submission, is encouraging the BfCC team to engage broadly with stakeholders across the sector to jointly develop and deliver an effective plan to reduce emissions from the built environment. Metals is proposing a more holistic approach and our submission lists the components that will be essential to a fair transition to a low emission, circular economy, providing international examples which are pertinent to New Zealand.

New Zealand's journey to 2050 is not just about carbon. New Zealand needs to measure its progress to 2050 across broader frameworks – for example, the Living Standards framework and the four capitals – natural, human, social and financial / infrastructure. New Zealand needs to continue to invest in our workforce; in our businesses; particularly our manufacturing (on which our construction sector depends); we need strong connected communities and along with our stewardship of the natural environment.

Metals New Zealand members have supported the re-establishment of the Sustainable Steel Council which is delivering a programme of work to build member capacity and capability on the journey to a low emission and circular economy.¹

The Sustainable Steel Council is submitting separately on the BfCC discussion documents as are Metals New Zealand member organisations listed at the end of this submission.

2. What will be needed to achieve Carbon Zero in New Zealand buildings by 2050

Achieving zero emissions from New Zealand's buildings and to transition to a circular economy is undoubtedly one of the biggest challenges the construction sector will face in the next three decades.

Metals New Zealand encourages MBIE Building for Climate Change team to adopt a systems approach based on Cradle to Cradle methodology which includes existing and new buildings, the operation/maintenance of buildings and end of life/deconstruction, reuse/repurpose or landfill.

Metals encourages the BfCC team to adopt an approach that considers the current and future context of New Zealand's built environment, engages all the stakeholders across the built environment and the owners/occupants of our buildings on the journey.

Achieving the goal will be an enormous transition from where New Zealand is currently and to enable the required change process we need to take all stakeholders on the journey.

It will involve significant change of behaviours: from how we design, build/retrofit, operate and maintain our buildings; how we deconstruct, re-purpose, reuse or recycle at end of life; we cannot continue to bury our waste materials, particularly when much of construction waste is new material.

To achieve this transition New Zealand will need a basket of incentives and regulations, a roadmap to guide us on the journey and measurement along the way.

The transition to zero emissions from buildings will need to consider that the built environment is a complex system, some of which is detailed in the following:

- 2.1 GHG emissions from transport account for approximately 20% of New Zealand's GHG emissions², so where we locate our future buildings and their interconnectedness with transport systems and decarbonising our transport systems will be critical to achieving the goal.

¹ Refer www.sustainablesteel.co.nz

² <https://www.transport.govt.nz/multi-modal/climatechange/>

2.2 Existing buildings will account for approximately 65% of the buildings New Zealand will have in 2050, and given that many existing buildings perform poorly - are high users of energy and water and deliver poor outcomes for their occupants - these surely must be the number one immediate target.

2.3 The current building code structure needs to be integral to New Zealand's climate change response. New Zealand has a robust framework of Standards and code clause requirements developed from International Standards, modified to address seismic conditions and the challenges of the New Zealand climate. New Zealand cannot favour low emission solutions which threaten our very resilience to the threats of climate change and natural events.

2.4 The transition to a circular economy will be critical for the construction sector to achieve New Zealand's zero emission targets from buildings.

Metals New Zealand have engaged with the Economic Transitions unit at MBIE, with the Ministry for Environment, the Climate Change Commission and the Prime Minister's Chief Science Advisor, seeking support/direction to start a circular economy conversation with government and the sector. We have received no support or guidance. While government is providing regulation and incentives for the plastics sector there is currently no similar initiative for the construction sector.

Metals New Zealand are eager to work with MBIE's BfCC team as to how we approach this from a systems perspective – engaging all the stakeholders on the journey (as in diagram on top of page 4).



2.5 New Zealand’s proposed transition must be referenced to international best practice. We must work collaboratively with other jurisdictions to share learning, while giving consideration to New Zealand’s unique seismic and climatic challenges.

The RIBA 2030 Climate Challenge³ proposes a robust framework which New Zealand might consider. Separating targets for domestic from non-domestic buildings, they present a hierarchy

Commencing with operational energy, in order of priority

- Building fabric
- Efficient services and low carbon heat
- Maximise on site renewables
- Minimise carbon offsets

Progressing to embodied carbon, in order of priority

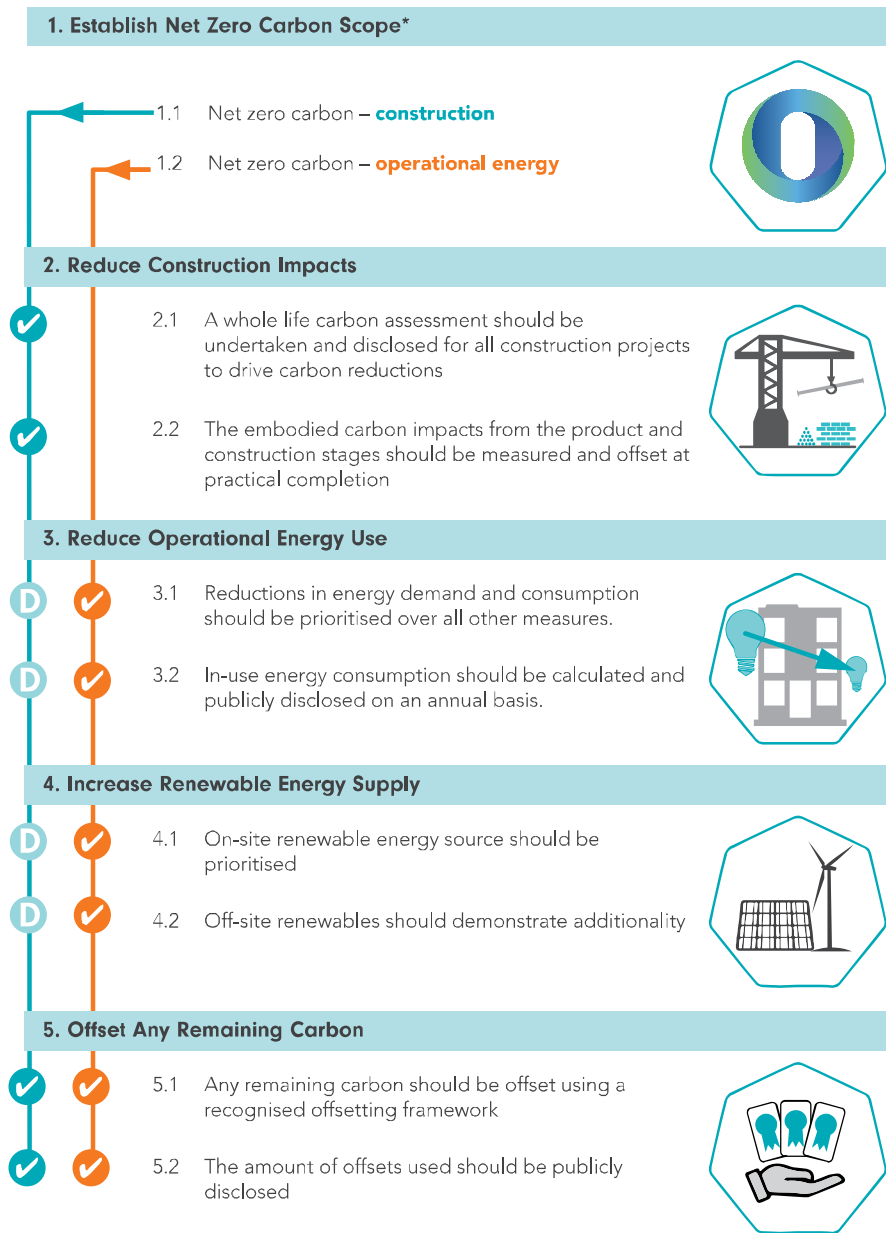
- Building fabric
- Using circular strategies
- Minimise carbon offsets

Finally potable water use

³ <https://www.architecture.com/-/media/files/Climate-action/RIBA-2030-Climate-Challenge.pdf>

The diagram below from UKGBC graphically depicts the journey⁴ as a useful graphic detailing the whole of system approach to zero emissions.

Steps to Achieving a Net Zero Carbon Building



D New buildings and major refurbishments targeting net zero carbon for construction should be designed to achieve net zero carbon for operational energy by considering these principles.

* Please also note, a further scope for net zero whole life carbon (1.3) will be developed in the future.

⁴ <https://www.ukgbc.org/wp-content/uploads/2019/04/Net-Zero-Carbon-Buildings-A-framework-definition-print-version.pdf>

2.6 Renewables and carbon off set instruments will be essential to achieving zero emissions.

Given the quantum of the challenge to reach zero emissions, (from new and existing buildings), on-site renewable generation and carbon off sets will be required and protocols around these need to be developed in partnership with stakeholders.

2.7 The role of data and tools will be critical. Life Cycle analysis is typically used for the design or improvement of products and processes⁵. Comparing natural systems (wood) with man-made systems (steel) may not be the smartest approach as they have different attributes, impacts and service life. One has components of a complex natural system, while the other is a clearly defined mining/manufacturing process.

New Zealand needs to ensure a standardised and moderated approach to data is used, that considers:

- transparency across the whole system;
- standardisation of assumptions being made;
- standardisation of the assumptions being made;
- moderation of the comparisons being made;
- moderation of product boundaries being used;
- standardisation and moderation of the methodologies being used; and
- cradle to cradle scope.

2.8 Policy framework needs to address the emission profile of imported building products

A significant amount of products in New Zealand's buildings are imported. While some are from reputable suppliers with robust data detailing their stewardship and life cycle analysis, others lack credible data. What will be the default position for imported products when there is no available data?

2.9 Policy needs to enable/facilitate transition and incentivise technology advancements

Supporting the transition to a circular, low emission economy, policy needs to ensure it does not disadvantage proven building systems that have delivered resilient building solutions for New Zealand's challenging seismic conditions and varied climatic conditions.

While globally we currently lack the technology to make steel without carbon there are potential solutions being developed here in New Zealand⁶ and in Sweden work has commenced on a pilot plant to make carbon free steel⁷.

⁵ <https://lcanz.org.nz/lca-guidance/lca-intro/>

⁶ <https://www.macdiarmid.ac.nz/news-and-events/news/annual-reports-pages/taking-essential-metals-into-a-zero-carbon-future/>

⁷ <https://www.macdiarmid.ac.nz/news-and-events/news/annual-reports-pages/taking-essential-metals-into-a-zero-carbon-future/>

Similarly, we should not forget that the process to make iron from iron sand was developed here in New Zealand and the journey to a circular low emission economy needs to incentivise and reward business who invest in R & D to develop future low or zero carbon technologies.

2.10 Policy framework needs to recognise the contribution of local manufacturing which deliver significant value to the sector and to the Living Standards framework.

In a post COVID New Zealand, international supply chains are proving to be less reliable than the past. New Zealand's construction/infrastructure deficit still needs to be built, and recognising that local manufacture delivers significantly more value to New Zealand than similar imported products, we need to ensure how strategic local manufacturing is fostered and grown through the transition process. For example New Zealand Steel in their 2020 Sustainability report noted that *When you buy \$100 worth of steel made in NZ, \$80 stays in NZ. When you buy imported steel, around \$5 stays in NZ*⁸.

3 Acknowledging complexity and using design led processes with key stakeholder groups will enable New Zealand to achieve its carbon targets

Metals New Zealand have identified some of the complexity inherent in New Zealand's transition to a low emission circular economy, if it is to be achieved by 2050. No doubt other submitters will add to this list.

Metals New Zealand encourages the BfCC to engage openly with the sector, mapping out what needs to be achieved, while working with other government agencies to ensure appropriate incentives and regulations are introduced to achieve New Zealand's carbon targets.

While transitioning to a circular, low emission economy in 2050, New Zealand must continue to build resilient buildings which will endure future seismic and climatic events and have a vibrant local manufacturing supporting construction through the transition.

Metals New Zealand will continue to participate to make this journey a success .

NB – the questions below will be submitted through on-line portal. The Submission above will be submitted separately.

⁸ <https://www.nzsteel.co.nz/assets/Uploads/Files/NZPI-SustainabilityDocument-Jul20-web3.pdf>

Metals New Zealand member organisations



www.hera.org.nz

The New Zealand Heavy Engineering Research Association (HERA) was established in 1979 as a non-profit research organisation dedicated to serving the needs of the metals-based industries in New Zealand. Its membership consists of approximately 600 companies representing metals-based fabrication and manufacturing companies, the associated design and consulting industry, related education providers, and the supporting material supply and services industry. HERA is base funded through an industry generated R&D contribution in the form of a levy on heavy steel and welding consumables administered by the Heavy Engineering Research Levy (HERL) Act. HERA's current research is in the areas of steel construction, general heavy engineering industry development and welding fabrication innovation. HERA works with other research providers such as universities, independent research organisations and CRIs to deliver its programmes.



Steel Construction New Zealand Inc. (SCNZ) aims to advance the interests of New Zealand's diverse steel construction industry by promoting the benefits of steel solutions in building and infrastructure projects. Members include manufacturers of structural steel and steel products, distributors, fabricators, designers, detailers, galvanisers, and paint and building supply companies. SCNZ provides its members with technical advice on the latest in steel design trends and standards, networking opportunities, and a representative voice with key industry and Government decision-makers.



www.castingtechnologynz.org

Casting Technology New Zealand (CTNZ) aims to be a major contributor to the success and prosperity of the metal casting industry. The organisation is an advocate for maintaining high industry standards and encourages members to participate in quality training programmes. It provides a network for technical and business activities among its membership at national and international levels. At a Government level, CTNZ keeps abreast of legislation relevant to the metal casting industry and, importantly, represents the industry's position on issues affecting the sector.



www.metalroofing.org.nz

The New Zealand Metal Roofing Manufacturers Association Inc. (NZMRM) represents companies that roll-form steel and other metals for roofing and cladding purposes. Commonly known as 'Rollformers', NZMRM has 30 member companies. Members are involved in producing a wide range of profiled product, both painted and unpainted. The Association is active in the development and promotion of industry standards, and in conducting research that promotes the use of metal roofing and cladding.



www.nashnz.org.nz

Formed in New Zealand and Australia in 1982, the National Association of Steel-Framed Housing (NASH) is an advocate for all forms of low and medium rise steel-framed construction. NASH represents the interests of suppliers, practitioners and customers of steel-framing systems, and provides a representative voice for the sector at Government level.



NZSSDA

The New Zealand Stainless Steel Development Association (NZSSDA) was formed in 1998 to promote and develop the stainless steel market in New Zealand. Its members include engineers, architects, fabricators, merchants and end-users with an interest in the supply or application of stainless steels. NZSSDA supports and encourages technical excellence in the industry and provides specialised training courses on stainless steel for the New Zealand market.

www.nzssda.org.nz



New Zealand's major aluminium extrusion companies work collaboratively, (supported by Metals NZ), on areas of common interest which include fair and free trade, non-conforming products, government procurement and sustainability.



The Sustainable Steel Council (SSC) was reconstituted by Metals NZ, HERA, SCNZ, NZMRM, NZSSDA, NASH, New Zealand Steel, Fletcher Steel and Steel and Tube in 2018. Members of the Sustainable Steel Council are committed to a vision where steel is valued as a critical enabler in New Zealand's journey to a low emission economy. The vision is achieved by a financially sound industry taking leadership in delivering to the living standards framework, measured across human, social, natural and financial / infrastructure capitals.