



**8 October 2020**

The following submission is on behalf of the Aluminium Extruders Association of New Zealand (ALENZ) on the proposed Building for Climate Change Programme/MBIE discussion documents:

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

**The Aluminium Extruders Association of New Zealand (ALENZ) – who are we:**

ALENZ is made up of the four independent businesses that account for almost 90% of aluminium extruded products manufactured in New Zealand. ALENZ work collaboratively to grow the market for aluminium extrusions in New Zealand across residential and commercial construction, manufacturing, fabrication, transport and marine sectors. Collectively ALENZ members produce over 30,000 tons annually of the world's lowest embodied carbon "GREEN" extruded aluminium (as measured by international standards).<sup>1</sup>

The Waikato is home to several of New Zealand's aluminium extrusion manufacturers and is recognised as the second largest aluminium manufacturing region in the southern hemisphere. The Waikato aluminium industry is worth in excess of \$1.0bn annually.

The secondary industry is estimated at over \$200 million and employs over 400 people directly at Independent Extrusions (INEX), ALTUS, Ullrich Aluminium and Extec. Taranaki is home to McKechnie Aluminium, pioneers of aluminium extrusion in New Zealand. McKechnie Aluminium have achieved third-party CEMARS® product certification by Enviro-Mark Solutions Ltd in their end of life/reuse and recycling operation.

**Introduction- ALENZ supports MBIE Building for Climate Change initiatives:**

ALENZ members support New Zealand's commitment to Zero Carbon 2050.

As aluminium extruders we know we are the manufacturers of some of the lowest carbon embodied "GREEN" aluminium extrusions in the world, as the vast majority of primary product "virgin aluminium" is sourced from smelters powered by renewable energy, or from recycled aluminium. However, for New Zealand to achieve the zero-emission goal we need to have a holistic plan which encompasses developments in new technology to fully transition to a circular economy.

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<sup>1</sup> Refer <https://www.metals.org.nz/wp-content/uploads/2020/08/ALENZ-Waikato-Aluminium-Case-Study-FINAL-20200622.pdf>

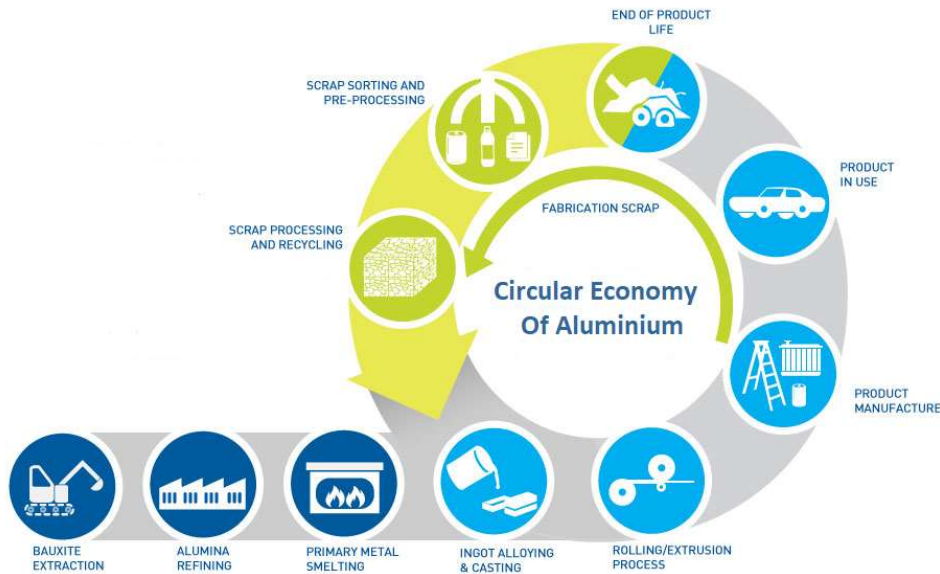
<sup>2</sup> Refer <https://mckechnie.co.nz>

<sup>3</sup> Refer <https://sustainabilityguide.eu>

<sup>4</sup> Source: [www.hulamin.com](http://www.hulamin.com)

A circular economy is a manifestation of economic models that highlight business opportunities where cycles rather than linear processes, dominate. It is restorative and regenerative by design and aims to keep products, components and materials at their highest utility and value always.<sup>3</sup>

### Circular Economy of Aluminium<sup>4</sup>



### From an Aluminium perspective we would like to see:

An industry led approach to achieving zero emissions.

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.

ALENZ encourages MBIE Building for Climate Change team to adopt a systems approach based on a "Cradle to Cradle" approach which includes not just new but also existing buildings and includes the operation/maintenance of buildings and end of life/deconstruction, reuse/repurpose or landfill.

"Cradle to Cradle" (C2C) is about seeing garbage as an eternal resource and doing the right thing from the beginning. It is about making community and product development function in the same way as a healthy ecological system where all resources are used effectively, and in a cyclical way (as opposed to the current linear system that can be better described as a Cradle to Grave system).<sup>3</sup>

ALENZ would like to see an approach that is:

- developed in partnership with construction sector stakeholders and the significant supporting manufacturing sector which provides products and solutions for new and existing buildings. In the post COVID economic recovery New Zealand needs to ensure it maintains local product supply chains to enable the construction sector to continue to deliver and for our economy/society to prosper. For example, the New Zealand metals manufacturing sector employs over 29,000 people directly.
- transparent as to what the roadmap to zero emissions 2050 for the sector will look like (given current knowledge), enabling both construction and manufacturing stakeholders to understand/respond to the challenge/opportunity.
- inclusive of all buildings – new and existing. Most of New Zealand's buildings will still be here in 2050. Many existing buildings perform poorly - are high uses of energy and water and deliver poor outcomes for their occupants.
- referenced to international best practice which will enable New Zealand to transition to a low emission circular economy. Aluminium, like other metals is infinitely recyclable and seldom ends up in landfill as it has significant value for recycling locally or internationally.
- explicit as to how imported products (of unknown carbon content) will be addressed.
- an understanding of the critical role of life cycle data, which is not transparent for some materials, is lacking for many imported materials, and some local materials.
- an understanding of how carbon off-set instruments will be included.

## **MBIE BfCC: WHOLE OF LIFE EMBODIED CARBON EMISSIONS REDUCTION FRAMEWORK**

### **Overarching BfCC approach**

#### **What support do you think you or your business would need to deliver the changes proposed in the frameworks?**

Recognising that our members would like to see a systems approach which:

- is focused on whole of life, cradle to cradle methodology which includes accounting for
  - the operation/maintenance of our buildings,
  - end of life deconstruction, reuse/repurpose/recycle or landfill
- is integrated into the performance clauses of the Building Code
- is referenced against international best practice (what can be learnt from EU and UK for example)
- all buildings should be included, given that we currently have over 65% of the buildings likely to be here in 2050
- includes the incentivising on-site energy generation/storage and rainwater capture/reuse to reduce energy demand/operational emissions while creating resilience
- provides a pathway that acknowledges some key locally made construction materials, already bear a carbon charge through the ETS
- includes clarity as to how carbon off set instruments will be included.

#### **What barriers are currently preventing (or discouraging) you, or your business, taking action to reduce emissions?**

Our member businesses are acutely aware of emissions because they arise from energy use. We are high users of energy and have invested significantly in modern technologies to reduce energy costs.

#### **What building classifications should be included in the Building for Climate Change work programme?**

New and existing buildings

Residential – stand along / terrace / medium density

Commercial

Industrial

Dairy sheds (excluding farm buildings) – high resource users

### **1 (Sections 1 and 2)**

#### **Should the Building for Climate Change work programme include initiatives to reduce whole-of-life embodied carbon in New Zealand buildings?**

YES. The work programme should include embodied, operational and emissions at end of life.

Methodology needs to enable the circular economy by recognising:

- second life materials which are re-repurposed or re-used (where the embodied carbon has already been accounted for)
- recycled material which has a significantly lower embodied carbon than virgin material.

## **2 (section 3.2)**

**To meet our carbon emission reduction goals, a key objective of the framework is to increase building material efficiency and reduce construction waste.**

Section 3 Objectives

The framework focuses on efficiency & carbon intensity.

Are these the only design parameters important to the future of NZ buildings?

How are these parameters aligned with the Building Code Clauses?

Are MBIE planning to minimise carbon intensity at the expense of structure and durability, protection from fire, external/internal moisture and energy efficiency?

Construction waste needs to be included as part of the framework – sending new construction material to landfill must be made unacceptable.

Product / material importers need to be accountable for their waste materials

**What measures, if any, do you think should be put in place to increase building material efficiency?**

All building materials should be accompanied with a recognised Environmental Product Declaration (EPD) including those imported.

**What measures, if any, do you think should be put in place to reduce construction waste?**

This is already being addressed by the Ministry for Environment (MfE) through increased landfill charges.

Local manufacturers are increasingly developing processes to take back their waste material and this should be incentivised by government (refer below).

Importers should be responsible for their imported waste.

## **3 (section 3.3)**

**Using low carbon construction materials and products is identified as another option to reduce whole-of-life embodied carbon emissions. How could we encourage the use of low carbon construction materials?**

Government's role in incentivising and supporting local manufacture to transition to the low emission and circular economy is significant and includes proactive policy around:

- targeted investment and R&D
- skills development focused on Industry/Construction 4.0 principles
- Government procurement which supports local manufacture and the procurement of low carbon local solutions
- the development of clear roadmaps for how local manufacturing industries will transition to meet zero Carbon Act requirements, including identifying the role that

different policy levers will play (e.g. Emissions Trading Scheme, R&D support, trade policy).

#### **4 (section 6)**

**The Framework proposes introducing reporting requirements for whole-of-life embodied carbon in buildings, followed by a cap on whole-of-life embodied carbon for new building projects.**

The proposed framework which relies on reporting at time of consent fails to account for:

- emissions resulting from construction and associated construction waste
- the emissions from the operation of the building
- emissions at end of life.

It also fails to consider that at end of life some of those materials can be repurposed in other buildings or can be recycled for subsequent use.

Tools such as NABERSNZ, could be mandated for public buildings thereby providing accurate data on operation of buildings.

Section 6 Methodology – raises numerous questions including:

- how will this methodology be developed?
- how will the methodology be referenced to International best practice?
- where is the methodology to account for carbon in imported building materials?
- how will offsets be managed in the methodology?
- in the absence of complete data sets there is a danger that only materials / products for which there is data, will be the products used, irrespective of other performance characteristics required by the Building Code.

**Would you support a cap on whole-of-life embodied carbon for new building projects?**

NO - Not in its current form. We would encourage MBIE to take a whole of life, cradle to cradle, systems approach including operational carbon and end of life. Then a cap would be appropriate

**Do you think a data repository of embodied carbon from buildings should be established?**

YES - A data repository of embodied and operational carbon from buildings will need to be established. A standardised and moderated approach needs to be developed that includes:

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

**If a data repository was established, do you think this information should be able to be accessed by the public?**

YES - The data should be made public.

**5 (section 6.1-6.3)**

**What would make it difficult for people to report the whole-of-life embodied carbon of new buildings, and why?**

The requirement of an internationally recognised EPD certificate should be established for all building materials to capture an accurate understanding of all embodied carbon within a building. Not having an international standardised EPD on all building materials including those imported would make having a complete understanding of the whole-of-life embodied carbon within each building difficult.

**What support is needed to make reporting embodied carbon a standard part of the design and construction process for every new building project in New Zealand?**

As above

**7 (section 7.1)**

**Do you think that requirements for embodied carbon calculations should only include the initial building life cycle stages (product and construction stage)?**

NO - To be effective in reducing emissions we need to take a cradle to cradle approach.

For New Zealand to transition to a circular and zero emissions economy, stakeholders will need comprehensive data of embodied and operational carbon.

**8 (section 7.2)**

**The Framework proposes limiting the scope of building components that would be included in an embodied carbon assessment, excluding components with lower emissions (such as internal fittings).**

This statement is not factually correct. If the structure is made from materials with low embodied carbon, then the emissions from the internal fitout is potentially significantly greater than that of the structure.

**Do you agree with this proposal?**

NO - To be effective in reducing emissions we need to take a whole of building cradle to cradle approach, or you will create perverse outcomes and minimise emission savings.

**Do you agree that the structural elements and building envelope should be in the scope of building components for calculating embodied carbon of a building?**

YES - The structural elements should be in scope, but so too should the rest of the building through the construction phase, the operation and maintenance of the building and its eventual demolition.

### 9 (section 7.3)

#### **Do you agree that the reporting and ultimately capping embodied carbon should apply to new building projects only, not refurbishment or demolition projects?**

NO - Given that most of our buildings will still be here in 2050, we need to focus on our existing buildings, many of which are poor performers on many levels – seismic, resource use and frequently deliver poor IEQ, with resulting health consequences.

As New Zealand aspires to circular economy principles demolition needs to part of the framework. We cannot continue to bury significant quantities of building materials.

We need to be focusing on materials that can be re-purposed, reused or recycled at the end of their current life.

### 10 (section 7.4)

#### **The Framework proposes that a simplified embodied carbon calculation tool could be used for small buildings, but more detailed calculations would be required for large buildings. Do you agree with this proposal?**

NO - New Zealand needs to take a whole of life, cradle to cradle approach. Relying on design and ignoring construction, operation and end of life will deliver little by way of reduction in emissions.

Engagement needs to be across the construction industry sector along with building owners and occupiers.

## **MBIE BfCC: TRANSFORMING OPERATIONAL EFFICIENCY**

### **Overarching BfCC approach**

What support do you think you or your business would need to deliver the changes proposed in the frameworks?

Recognising that our members would like to see a systems approach which:

- is focused on whole of life, cradle to cradle methodology which includes accounting for
  - the operation/maintenance of our buildings,
  - end of life deconstruction, reuse/repurpose/recycle or landfill
- is integrated into the performance clauses of the Building Code
- is referenced against international best practice (what can be learnt from EU and UK for example)
- all buildings should be included, given that we currently have over 65% of the buildings likely to be here in 2050
- includes the incentivising onsite energy generation/storage and rainwater capture/reuse to reduce energy demand while creating resilience
- provides a pathway that acknowledges some key locally made construction materials, with currently high embodied carbon already bear a carbon charge through the ETS includes clarity as to how carbon off set instruments will be included



**What barriers are currently preventing (or discouraging) you, or your business, taking action to reduce emissions?**

Our members are well engaged in reducing their own operational emissions and as an industry ALENZ is engaging in the development of a New Zealand aluminium extruders EPD.

**What building classifications should be included in the Building for Climate Change work programme?**

New and existing buildings

Residential: Stand-alone / Terrace / Medium density

Commercial

Industrial

Dairy sheds (excluding farm buildings) – high users of water and energy

**Should the Building for Climate Change programme include measures to improve the operational efficiency of our buildings?**

YES - Certainly, but they should be aligned with current Building Code Clauses.

Reliance on consent data is insufficient.

Monitoring and reporting for commercial buildings should be part of annual building warrant of fitness programme, or through tools like NABERSNZ.

A sample of state funded rentals should be monitored, and performance reported on an annual basis to ensure rental homes are delivering to the prescribed standard. Smart technologies already enable this at minimal cost and actual data will inform future legislation and targets.

**The Framework proposes that operational efficiency requirements tighten in a series of steps with the requirements for each step published at the outset and reaching the final step by 2035.**

YES - We support a transition framework where targets are signalled well in advance and participants are incentivised to achieve these targets.

Omitted from the framework is:

- the role of design in reducing operational emissions- good passive solar design, orientation to the sun, efficient use of natural light and high levels of insulation, will all significantly reduce operational emissions
- occupant behaviour
- use of smart technologies to monitor building performance

**Do you think that this approach and timeframe is appropriate?**

YES - Timeframe is appropriate.

Approach needs to be broader – taking systems approach, as outlined above

**How long do you think the Building and Construction Sector will need to prepare before we begin introducing operational efficiency requirements?**

The ALENZ members are continually looking for and initiating operational efficiencies.

**Should outbuildings and ancillary buildings be exempt from operational emission reduction requirements?**

Threshold needs to be based on resource consumption, not building description.

**8.4**

**The Framework proposes that operational efficiency requirements will only apply to new buildings initially with further work to look at requirements for existing buildings being undertaken later. Do you support this approach?**

YES - Existing buildings is the logical place to start given that buildings they will dominate stock in New Zealand in 2030 / 2050.

New buildings will already be adopting resource efficiency technologies.

**8.5**

**Would you support a limit on emissions from fossil fuel combustion to operate buildings (i.e. space and water heating)?**

YES - Propose that fossil fuel combustion in buildings be banned from 2030.

**8.6.1 – Thermal Performance**

**Do you think that new Thermal Performance requirements based on heating and cooling demand should be introduced to support increased operational efficiency of buildings?**

YES - Is this not covered by H1 (energy efficiency) clauses in the Code?

**8.6.1 – Services Efficiency**

**Requirements for the efficiency of fixed services (such as heating and cooling systems, hot water systems and appliances, ventilation systems etc) are not currently set out in the Building Code. Do you think that Services Efficiency performance requirements should be introduced to support increased operational efficiency of buildings?**

YES - These should be addressed within the current clauses in the code E3 Internal moisture, G4 Ventilation, G6 Airborne and impact sound, and H1 Energy efficiency

**8.6.3 Plug loads**

**The framework proposes that there are requirements for the plug loads for large buildings\*, but not small buildings – do you support this approach? (\* Large and small buildings as defined in the framework scope section)**

N/A

#### 8.6.4

**The Framework proposes that new buildings will not be required to include onsite renewables/energy generation/ or energy storage capacity. Do you agree with this proposal?**

NO - Onsite renewables have the potential to significantly reduce total emissions. They should be encouraged not excluded.

#### 8.7

**Do you think the following elements should be excluded from the programme?**

- **Electrical appliance efficiency**
- **On-site collection and storage of water**
- **On-site wastewater treatment**

NO - They all contribute to reduced operational emissions, reduced energy and water use.

What is the rationale for excluding?

#### 8.

**What elements should be considered to provide a suitable indoor environmental quality for good occupant health and wellbeing?**

International benchmarks are available for temperature, moisture and air exchange.

Refer: World Health Organisation (WHO) or as attached:

<http://www.level.org.nz/passive-design/controlling-indoor-air-quality/humidity-and-condensation/>

Significant work has been done in New Zealand to identify key metrics to deliver warm, dry, affordable, healthy homes.

Refer:

[https://www.beaconpathway.co.nz/further-research/article/beacons\\_hss\\_high\\_standard\\_of\\_sustainability](https://www.beaconpathway.co.nz/further-research/article/beacons_hss_high_standard_of_sustainability)