

Response by

Hamilton City Council Staff

PROPOSED CHANGES TO ASSIST REDUCING CARBON EMISSIONS IN THE BUILDING AND CONSTRUCTION SECTOR

16 October 2020

It should be noted that the following response is from staff at Hamilton City Council and does not necessarily represent the views of the Council itself.

1.0 SUMMARY OF KEY POINTS

- 1.1 Overall support for the direction and intent of MBIE's *Proposed Changes to Assist Reducing Carbon Emissions in the Building and Construction Sector*.
- 1.2 Support content and direction of SOLGM's submission.
- 1.3 Government needs to give much greater consideration to the 'cost-benefit' analysis when introducing new policies or standards (including those likely to result from MBIE's current proposals), particularly where the implementation of such policies/standards falls directly on local government, with no commensurate funding from Government.
- 1.4 MBIE's proposals, if implemented, will clearly have a significant impact on the construction and building industry - including adding to the construction cost of residential and commercial buildings.
- 1.5 The proposals will also impact significantly on councils in their role as a Building Consent Authority e.g. the time and cost requirements around training staff to learn new systems and the additional time (and cost) required to undertake embodied carbon calculations in checking/approving building consents.
- 1.6 Putting in place a mandatory cap on building consent for whole of life runs the risk of adding a lot of compliance. The cost of meeting and reporting on the cap, and its impact on housing affordability, needs to be measured as well alternative options to understand the cost and benefits of the approaches.
- 1.7 Following the current consultation phase, we support the subsequent use of a comprehensive Regulatory Impact Statement (RIS) for MBIE's proposals.
- 1.8 Development of a RIS would ensure provision of a high-level summary of the problem being addressed, the options and their associated costs and benefits, the consultation undertaken, and the proposed arrangements for implementation and review.
- 1.9 Potentially one of the easiest, most efficient, and most practical way towards to ensure buildings are carbon neutral is a combination of improving New Zealand Building Code compliance and mandatory green building measurement tools, such as those advocated by the New Zealand Green Building Council and/or used overseas.
- 1.10 Some tools have the ability to reduce water and energy use, waste produced, provide a grade/score which may be measured against other similar buildings, encourages building innovation and for design in excess of minimum building code requirements, and contribute towards an increase in occupant health and well-being in addition to reducing carbon emissions. It is recommended data-based tools and those utilising independent peer review of such as NABERS (the National Australian Built Environment Rating System) be used where possible.

- 1.11 The cost of making buildings 'green' and reducing carbon varies according to the scope and type of work, but there may be no additional cost in some cases, particularly when designed into the building and site from the start and may typically be around 2-5 percent of the building cost up to round 15 percent for world class green buildings.
- 1.12 The cost of these measurement tools is borne by the building owner/applicant and aligns with our concerns around the cost being borne by local councils.

2.0 INTRODUCTION

- 2.1 In general, staff from Hamilton City Council (HCC) support the overall direction and intent of the Ministry of Business, Innovation and Employment's *Proposed Changes to Assist Reducing Carbon Emissions in the Building and Construction Sector*, as outlined in the following two consultation documents:
 - Whole-of-Life Embodied Carbon Emissions Reduction Framework.
 - Transforming Operational Efficiency.
- 2.2 However, we do have concerns around the level of detail provided in the consultation documents, particularly given the likely significant impact MBIE's proposals will have on the construction sector and local government.
- 2.3 For example, there does not appear to be enough information provided around the likes of how a standardised carbon measurement system of materials/products will be developed and implemented in practice, as well as the types of training/support regimes that will need to be available to Building Consent Authorities etc.
- 2.4 We have provided feedback to the questions outlined in MBIE's official Feedback Form at the end of this response.

3.0 SUPPORT FOR SOLGM'S SUBMISSION

- 3.1 Overall, we support the content and direction of SOLGM's submission, and in particular the following key points.
- 3.2 *We support a balance of having sufficient carbon information to achieve the purposes of carbon reduction, whilst maintaining the ability to regulate without undue expense for home-owners, builders and local authorities, because housing affordability is an important part of the considerations. We support implementing the greatest carbon reductions for the least expense. Costs of design, building and local authority regulation will be passed on to home-owners, therefore we propose governmental support with national technology and guidance materials.*
- 3.3 *We ask that MBIE take this opportunity to support the proposals by establishing New Zealand standards, providing national carbon software and the development of artificial intelligence (AI) for sustainability so that the sector is able to deliver and regulate carbon cost effectively and consistently.*
- 3.4 *We propose that at consenting stage, designers supply carbon information and demonstrate compliance. Local authorities would need to train building inspectors to include carbon metric assessment, however the responsibility to demonstrate compliance should remain with the building designer.*
- 3.5 *We propose that the missing piece in the consultation document is a mandatory requirement for every manufacturer or importer to disclose the embedded carbon value on a product by product basis i.e. x/m3. There could be a place for this in the Building (MMC) Bill in the proposed Part 4B Building Product Information Requirements. With that information, designers could design within a cap and councils could assess designers' compliance statements against the statutory requirements.*
- 3.6 *A further option which we recommend be given some consideration is that low carbon archetypes and best practice 'Acceptable Solutions' be developed for the sector. Designs of pre-worked out carbon loads for both operational and embodied carbon would be efficient for the sector to design to and regulate against.*
- 3.7 *Whether legislating for archetypes or carbon data metrics we recommend the legislation be drafted broadly enough to allow for both.*

- 3.8 *We support the elimination of fossil fuel use in new buildings for heating, cooking and other operations by 2035, however, we consider this is a tight timeframe that will require a robust framework and guidance materials.*
- 3.9 *We support increasing the passive operational efficiency of buildings so they hold energy well and make better use of the sun's energy for heating. We support lowering carbon emissions by increasing efficiency in water use. Lastly, we support building technologies which use less embodied carbon, measured over the expected lifetime of a building.*
- 3.10 *We note that the Ministry for the Environment is proposing to reduce construction waste by increase tipping fees under the Waste Minimisation Act regulations. We support the changes. Further, we recommend synergistic changes to the Building Act to encourage reduction, reuse, recycling, and recovery of building products.*
- 3.11 *We support Local Government New Zealand's submission on this consultation which recommends there be further consideration of carbon emissions from building in the larger context of the New Zealand Emissions Trading Scheme.*
- 3.12 *Many local authorities have declared climate change emergencies and are in the process of reducing their carbon emissions to net zero emissions by 2050. They have in their sights the elimination of fossil fuels from heating public swimming pools and public buildings. Council controlled organisations are working on eliminating fossil fuel heating from council housing, and some councils have implemented sustainable purchasing policies. In this way, local authorities are reducing their own carbon emissions from buildings.*
- 3.13 *Lastly, we take this opportunity to support our communities to transition to 21st century living. Our submission supports our communities to shift to low emissions and low waste lifestyles.*

4.0 CONCERNS AROUND COST OF THE PROPOSALS FOR LOCAL GOVERNMENT

- 4.1 Implementation of MBIE's proposals will clearly have a significant impact on the construction cost of new buildings (residential and commercial), although ongoing operational costs should reduce.
- 4.2 MBIE's proposals will also impact significantly on councils in their role as a Building Consent Authority e.g. the time and cost requirements around training staff to learn new systems and the additional time (and cost) required to undertake embodied carbon calculations in checking/approving building consents.
- 4.3 As such, we have serious concerns around the imposition of new policies and standards on local government by central government with the aim of creating national benefit.
- 4.4 HCC has outlined such concerns in various submissions to the likes of Local Government New Zealand and the New Zealand Productivity Commission (Funding and Financing Inquiry). The requirement for all councils to develop, implement and monitor a Local Alcohol Policy (LAP) is a case in point. In the case of Christchurch City Council, development of its LAP cost the council over \$1 million.
- 4.5 We are therefore of the view that Government needs to ensure greater consideration is given to the 'cost-benefit' analysis when introducing new policies or standards (including those likely to result from MBIE's current proposals), particularly where the implementation of such policies/standards falls directly on local government - with no commensurate funding from Central Government.
- 4.6 The issue around local government having to resource/fund Government imposed policies and standards needs to be top of mind in discussions between the two entities.
- 4.7 Given the significance of MBIE's proposals, our understanding is that a comprehensive Regulatory Impact Statement (RIS) will be undertaken on this whole issue subsequent to the current consultation phase.
- 4.8 We support this next phase as the RIS would ensure provision of a high-level summary of the problem being addressed, the options and their associated costs and benefits, the consultation undertaken, and the proposed arrangements for implementation and review.

5.0 IMPROVING THE NZ BUILDING CODE COMPLIANCE AND GREEN MEASUREMENT TOOLS

- 5.1 Potentially one of the easiest, most efficient, and most practical way towards to ensure buildings are of a low emissions nature is a combination of improving the New Zealand Building Code compliance and mandatory

green building measurement tools, such as those advocated by the New Zealand Green Building Council and/or used overseas. Some tools have the ability to reduce water and energy use, waste produced, provide a grade/score which may be measured against other similar buildings, encourages building innovation and for design in excess of minimum building code requirements, and contribute towards an increase in occupant health and well-being in addition to reducing carbon emissions. It is recommended data-based tools and those utilising independent peer review of such as NABERs be used where possible.

- 5.2 The principles of the Building Act 2004 have never fully aligned with the New Zealand Building Code clauses and we believe that there is considerable opportunity to improve insulation, passive solar, ventilation, reduce water and energy use and minimise waste produced, to name just a few.
- 5.3 Green building measurement tools have been around for over 30 years and are successfully used overseas, with significant reductions in energy, water, waste and carbon emissions, as well as corresponding improvements in occupants' health and well-being.
- 5.4 This has been well documented both here in New Zealand by the New Zealand Green Building Council and overseas such as university studies involving LEED (Leadership in Energy and Environmental Design) certified buildings. In Australia NABERs (the National Australian Built Environment Rating System - an initiative by the Australian Government to measure and compare the environmental performance of Australian buildings and tenancies) has been running for over 10 years and been very successful in reducing energy and water use, reducing carbon emissions, and reducing waste produced saving billions of dollars in energy usage alone. Green building measurement tools exist that can assist with measuring carbon both in the initial construction and during the ongoing use of the building - they are simple and effective.
- 5.5 The cost of making buildings 'green' and reducing carbon varies according to the scope and type of work, but there may be no additional cost in some cases, particularly when designed into the building and site from the start and may typically be around 2-5 percent of the building cost up to round 15 percent for world class green buildings.
- 5.6 The cost of these measurement tools is borne by the building owner/applicant and aligns with HCC staff concerns around the cost being borne by local councils.

6.0 WHOLE OF LIFE EMBODIED CARBON EMISSIONS REDUCTION - DISCUSSION DOCUMENT

- 6.1 Given that most embodied emissions occur in the production of building materials this seems the key area to focus on. The key stages to reduce emissions appear to be the Product Stage (A1 to A3) and the Use Stage (B3 and B4). Coincidentally, the Romans had expertise at reusing construction materials, as noted by archaeology digs and reports which show how materials were recycled from one building to another.
- 6.2 We agree with the set out of objectives formula as shown on page 6 of the discussion document.
- 6.3 We would have liked to have seen a listing of common construction materials used in New Zealand with their known embodied carbon and the relative weighting of each used in construction outlined in the discussion document. This would have provided useful context. A recent report 'Under Construction' by Thinkstep-ANZ provides useful analysis on these matters.
- 6.4 **Approach:** Putting in place a mandatory cap on building consent for whole of life runs the risk of adding a lot of compliance. The cost of meeting and reporting on the cap, and its impact on housing affordability, needs to be measured as well alternative options to understand the cost and benefits of the approaches.
- 6.5 **Section 6.3 Software Tool:** This should be a free online tool to keep costs as low as possible. The online tool should include access to free support via a Help Desk on how to use the calculator and to provide technical guidance.
- 6.6 **Section 7.1 Initial Scope:** This includes 'cradle to gate' and cradle to 'practical completion' and excludes 'cradle to grave' to 'cradle to cradle'. The rationale for making the decision on the initial level of scope is not detailed enough for us to make an informed decision on the benefit of each of the options.
- 6.7 Further information on the costs and benefits of the different scope levels needs to be articulated, including the impact on emissions, housing affordability and Council resourcing requirements. An alternative initial approach could be to focus on different levels of scope for specific building categories. The broader scope

could be used for buildings that would have a significant amount of emissions in this process that would justify the effort in providing this data.

6.8 Responses to the consultation questions are included in the template attached at the end of this feedback.

7.0 TRANSFORMING OPERATIONAL EFFICIENCY - DISCUSSION DOCUMENT

7.1 The discussion document provides a high-level concept and further data and information is required on the costs and benefits of the framework, especially the impact on housing affordability.

7.2 The Operational Emissions Cap is made up of CO₂e of fossil fuels, kWh of electricity used/m² and litres of water per dwelling per building. We recommend that the name 'Operational Emissions Cap' be changed to 'Resource Efficiency Cap' to reflect that this seems to be about setting performance levels for fossil fuels, electricity and water use based on the individual measures used.

7.3 For large buildings, it may be worthwhile considering the impact of fossil fuel reduction on electricity demand during peak times. During peak demands, electricity pricing is designed to incentivise customers to reduce power used in peak demand times. However, space heating often occurs during grid peak times. This can be mitigated by using fossil fuels to compensate over these time periods. Thermal performance design of new builds will need to be implemented properly in both the construction and operation of the building to prevent high electricity demand costs being passed onto businesses if fossil fuels are removed as sources of heating. Potentially peak demands on the network could actually increase and create localised infrastructure problems.

7.4 It is unclear how the regulation of Plug Loads for large buildings would work in practice. They are very difficult to control e.g. a hospital with specialised medical equipment; computers with particular IT requirements. If these are to be put in place exemptions for certain types of large buildings should be considered.

7.5 Occupant Health and Wellbeing - we note that there is growing support for increased ventilation rate changes inside buildings to reduce the impact of virus particles through dilution. This should be added into Section 7.8 of the discussion document.

7.6 Emission Cap Factors - further consideration of the appropriateness of a 'one size fits all' approach to the cap is required. It's not clear how this will work in practice i.e. is a thermal performance of 60kWh/m² appropriate for both a commercial building and a residential house?

7.7 Responses to the consultation questions are included in the template attached at the end of this feedback.

8.0 FURTHER INFORMATION AND OPPORTUNITY TO DISCUSS OUR RESPONSE

8.1 Should the Ministry of Business, Innovation and Employment require clarification of the response provided, or additional information, please contact Charlotte Catmur (Sustainability and Environment Advisor) on 07 838 6538 or email charlotte.catmur@hcc.govt.nz in the first instance.

8.2 Hamilton City Council staff would welcome the opportunity to discuss the content of our response with the Ministry of Business, Innovation and Employment in more detail.

Yours faithfully



Richard Briggs
CHIEF EXECUTIVE



Submission Form

Building for Climate Change

1. Contact details (optional)

Name: Charlotte Catmur
Company/organisation: Hamilton City Council
Email address: charlotte.catmur@hcc.govt.nz

2. Are you making this submission on behalf of a business or organisation?

- No
 Yes (please tell us which Company/Organisation you are making this submission on behalf of)

Hamilton City Council (**Note: This response is from Hamilton City Council staff.**)

3. Would you like to:

- | | | |
|---|--|---|
| Remain anonymous in the published consultation summary report | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes |
| Receive a copy of your own submission | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes |
| Receive future updates on Building for Climate Change programme | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes |

4. Are you willing to be contacted in relation to your submission if MBIE has questions about your response?

- No Yes

5. The best way to describe your role is:

- | | | |
|--|---|---|
| <input type="checkbox"/> Architect | <input type="checkbox"/> Building owner | <input type="checkbox"/> Geotechnical Engineer |
| <input checked="" type="checkbox"/> Building Consent Authority/Officer | <input type="checkbox"/> Electrician | <input type="checkbox"/> Structural Engineer |
| <input type="checkbox"/> Builder | <input type="checkbox"/> Engineer – other | <input type="checkbox"/> Plumber/Gasfitter/Drainlayer |
| <input type="checkbox"/> Building product/material supplier | <input type="checkbox"/> Fire Engineer | <input type="checkbox"/> Other |

To submit this form via email:

Once you have completed the form, you can email it to BfCC@mbie.govt.nz, with "Submission" in the subject line.

To submit a print copy of this form:

You can post or courier your submission to:

Via Courier:

Building System Performance
Ministry of Business, Innovation and Employment
Building for Climate Change Submission
15 Stout Street,
Wellington 6011

Via Post:

Building System Performance
Ministry of Business, Innovation and Employment
Building for Climate Change Submission
PO Box 1473
Wellington 6140

Overarching approach of the Building for Climate Change programme

6. Do you agree or disagree that the Building and Construction Sector needs to take action to reduce emissions?

Strongly disagree Disagree Neither Agree Strongly agree

Please tell us why.

All sectors have a role to play in reducing emissions to meet the 2050 target. Embodied emissions in buildings are significant and the specification of low carbon materials will support carbon reductions. Operational efficiency will help somewhat towards carbon reductions but there are many other benefits arising from well-performing buildings that will benefit New Zealand.

The building sector also has responsibility to create buildings that will not impact on the wellbeing of occupants and ensure the costs of running the building are not prohibitive in the long run.

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

All parties impacted will require appropriate guidance and tools to deliver the proposed changes without causing an excessive increase in costs.

A way to minimise cost could be to focus on the embodied carbon in the main common materials used in construction or government promotion of fit for purpose alternatives.

We support SOLGM's position on this issue i.e. *Local authorities would be required to implement the regulation of operational and embodied carbon for all building consents, on-site inspections and Code of Compliance Certificates.*

Implementation of additional regulation as proposed in the frameworks would require designers to calculate compliance of operational and embodied carbon for all new buildings. Local authorities would need to train building inspectors to include carbon metric assessment, however the responsibility to demonstrate compliance should remain with the building designer.

We are cognisant that ascertaining the data for the amount of embodied carbon in a new building may be as much work as that of a quantity surveyor's job for each building design. Regulating this data would be substantial, and very expensive for territorial authorities to implement. The expenses of regulation would be passed onto the customer and increase the cost of building. Therefore, we do not support regulation which would require quantity surveyors (or equivalent data analysts) to process consents at local authority level.

The inclusion of carbon data into the building consenting process is an opportunity for central government departments to enable making carbon calculations as easy as possible. We support the development of a New Zealand industry standard and ask that MBIE take this opportunity to develop software and AI for this purpose.

We note that the New Zealand Green Building Council has an existing rating scheme for both residential and commercial builds (HomeStar and GreenStar), and that they are working on a zero-carbon standard for buildings. Data on the embodied carbon of some building materials is available from the NZGBC, which could be a starting point for an industry standard.

Whether legislating for archetypes or carbon data metrics we recommend the legislation be drafted broadly enough to allow for both.

8. Are there any barriers that are currently preventing (or discouraging) you, or your business, taking action to reduce emissions?

No Yes

Please identify the main challenges.

Upfront capital funding.

9. Do you think the Building for Climate Change work programme should include the following building classifications?

	No	Yes
Housing	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Communal Residential	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Communal Non-Residential	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Commercial	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Industrial	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If you have indicated that you believe one, or more, building classifications **should not** be included, please tell us why.

We are supportive of all these classifications being included where realistic caps can be defined. We recommend MBIE investigate where exemptions or alternative caps need to be introduced. A further breakdown of the classifications might be of benefit, especially where exemptions may be required.

Framework: Transforming Operational Efficiency

10. Do you agree or disagree that the Building for Climate Change work programme should include measures to improve the operational efficiency of buildings in New Zealand?

Strongly disagree Disagree Neither Agree Strongly agree

Please tell us why.

We agree that the operational efficiency of buildings is an important component of the Building for Climate Change Programme. We also see that there is the opportunity to make a wide range of improvements to our buildings by doing this. We believe that more focus is required in MBIE's document on building design, especially in the context of climate change adaptation.

11. The Framework proposes that operational efficiency requirements tighten in a series of steps to reduce emissions in the Building and Construction Sector, with the requirements for each step published at the outset and the final step being reached by 2035.

Do you support a gradual introduction of operational efficiency requirements, using a stepped approach?

No Yes

It is noted that the emissions arising from fossil fuels, electricity and water are not equal in global warming potential. Consideration should be given on prioritising fossil fuel reductions, then electricity and water when considering the application of a cap i.e. As New Zealand’s electricity becomes more renewable, emissions from electricity will lower.

12. Do you think the timeframe is appropriate?

- Yes No, it’s too short No, it’s too long

Please tell us your ideal timeframe if it's not by 2035.

If the supporting framework, including resources and guidance, are developed in a timely manner then the 2035 timeline seems appropriate, given the requirement for emissions reduction and the need for industry and council adjustment.

13. The Framework proposes that a number of building types will be exempt from operational emission reduction requirements.

Do you agree or disagree with the proposal to exclude the following from operational efficiency emission reduction requirements?

	No	Yes
Outbuildings	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ancillary buildings	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please tell us why.

Given the nature of the use of outbuildings and ancillary buildings, it makes sense to exclude these buildings from the framework.

Approach

14. 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 at a later date.

Do you support this approach?

- No Yes

Please tell us why.

We agree that at this stage it is most appropriate to focus on new builds. We recommend that the timeframe for looking at existing buildings should be outlined. Due to the type of existing building construction, it might be difficult to make the significant changes required to meet the proposed ‘operational efficiency’ caps due to thermal losses and so on.

There is potential to include existing buildings undergoing significant upgrade works and/or seismic upgrade. The wording would need to trigger significant upgrade work. This is a difficult definition as evidenced by the current fire and accessibility upgrade requirements.

15. Do you support a limit on emissions from fossil fuel combustion to operate buildings (e.g. for space and water heating)?

No

Yes

Please tell us why.

In principle, we support the limit on emissions from fossil fuel combustion, noting that the impact on the cost of electricity and therefore the affordability needs to be considered.

In particular, the use of electric hot water heat pumps for indoor swimming pools could result in significant cost increases over peak demand periods.

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

No

Yes

Please tell us why.

We are supportive of including the thermal performance requirements as there is currently insufficient attention on the thermal fabric of buildings.

Following Covid 19, there is increased awareness of the importance of air changes in buildings. This dilutes the virus particle in the air. Designing houses and other buildings with the ability to increase ventilation rates to 6/hr would be beneficial.

17. Detailed requirements for the efficiency of fixed services (such as heating and cooling systems, artificial lighting, 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?

No

Yes

Please tell us why.

We are supportive of services efficiency performance requirements being introduced. As well as designing buildings appropriately, these fixed services are important considerations for the efficiency of a building. As well as improving operational efficiency, the ongoing costs of operating the building should be reduced as a result of these requirements.

18. 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)

No

Yes

Please tell us why.

We are not supportive of the proposal with respect to plug loads for large buildings. We agree that it shouldn't be included for small buildings and for large buildings, greater consideration is required on the types of buildings e.g. hospitals and offices and whether one requirement is appropriate for all large building types.

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

Strongly disagree	Disagree	Neither	Agree	Strongly agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please tell us why.

In many situations onsite generation does not make economic or environmental sense.

20. The Framework currently proposes to exclude the following elements from the Building for Climate Change work programme. Which do you think should be included or excluded?

	Should be included	Should be excluded
Electrical appliance efficiency	<input type="checkbox"/>	<input checked="" type="checkbox"/>
On-site collection and storage of water	<input checked="" type="checkbox"/>	<input type="checkbox"/>
On-site waste water treatment	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please tell us why.

Electrical Appliance Efficiency
 Electrical appliance efficiency is covered by the separate Energy Rating Scheme. Adding in plug loads will be very difficult to manage in practice due to occupant choices.

On-Site Collection and Storage of Water
 Although we support on-site collection, storage and use of rain-water, incentives need to be introduced for such systems to be economically viable.

We recognise that rainwater reuse systems provide the following benefits. They:

- Reduce the total volume of potable water a property draws from the public water supply system each year, so as to minimise annual operating demands on the water supply network.
- Reduce the stormwater discharge from a property, which reduces demands on downstream stormwater networks and reduces the potential for erosion and sedimentation of receiving waters.
- Improve the water quality of stormwater discharged from a property by filtering out contaminants from roofs that would otherwise be discharged to the stormwater network.
- Increase the resilience of the City’s water supply network by creating multiple, independent water sources which could be drawn upon in times of emergency, such as earthquake, fire or flood should the municipal water supply be unavailable.
- Augment the capacity of the water supply, albeit with reduced effectiveness at times of drought.

Rainwater tanks can also be used to reduce the peak discharge of stormwater from a site by temporarily holding the rainwater and releasing it slowly to the stormwater network to avoid flooding or erosion, scour and sedimentation in the receiving environment.

However, rainwater reuse tanks have limitations. When landscape irrigation needs are greatest during times of drought, the tanks are likely to be empty. Conversely, during winter, when the tanks are likely to be full, there is no demand for water for irrigation purposes. Outdoor use accounts for about 18% of annual domestic water use. Despite this limitation, significant potential savings can still be achieved by using rainwater for toilet and laundry use, which account for about 17% and 22% of

annual domestic water use respectively.

Rainwater tanks and rainwater use systems used solely for the purpose of reducing potable water consumption are uneconomic. A 2014 economic assessment of a rainwater tank and reuse system connected to, and used for, toilet, laundry and outdoor purposes indicates that the net present value of the capital, operational and maintenance costs of such a system (\$11,980) are 2.3 times the net present value of potential savings that would accrue to the residents of a standard dwelling from use of such a system (\$5,127), if residents were billed for the volume of water supplied at HCC's 2014 tariff rate of \$1.66/m³ (Wainui Consulting Limited, 30 September 2014).

The minimal potential financial savings accruing from use of rainwater tanks and reuse systems would not justify requiring them to be installed and used in residential units. Unless the price for water supplied were significantly higher, rainwater tanks and reuse systems are a financially inefficient mechanism for reducing water demand in residential situations.

While rain tanks provide other benefits (listed above), they will not reduce water demand during critical periods of drought when the tanks are likely to be empty. Therefore, having rainwater tanks would not significantly reduce peak water demand (for which the water supply network has to be designed).

It is considered the quantified potential financial benefits of rainwater reuse systems are insufficient to justify imposing on developers or owners of residential units or other new buildings containing a kitchen, laundry or bathroom, the significant additional costs of supplying the rainwater tanks and connecting them to the laundry and toilet(s).

The viability of rainwater tank and rainwater use systems is site specific. There may be situations, such as in industrial or commercial areas, where they are viable. It is anticipated the appropriateness of these systems will be considered on a case-by-case basis when a Water Impact Assessment (WIA) or Integrated Catchment Management Plan (ICMP) is prepared; a WIA or ICMP could require use of these systems where justified. The Hamilton City District Plan requires a WIA to be prepared for any development or subdivision creating four or more additional residential units on any site, or other similar or larger sized developments for commercial or industrial activities.

Waste Water Treatment

Onsite waste water treatment may apply predominantly to rural buildings, including predominantly dwellings where no council waste water system/treatment is available and there are limited alternatives for on-site water treatment. The cost of including waste water treatment in the programme for these types of buildings and for building owners in ensuring on-site waste water may exceed potential gains.

21. Buildings need to provide suitable indoor environmental quality (IEQ) for good occupant health and wellbeing outcomes. The Framework identifies the following critical IEQ parameters:

- Air temperature
- Relative or absolute humidity
- Ventilation rates
- Surface temperature
- Hygienic surface temperature (avoidance of mould)
- Daylight provision

If there are any additional elements that you think should be considered, please record them in the comment box below.

Specific information on fresh air ventilation rates and minimum and maximum air temperatures.

22. The Framework proposes that the Thermal Performance energy use intensity and services energy use intensity are considered during the consent application process, and when a Code Compliance Certificate is applied for.

Do you think this would impact you or your business/organisation?

No

Yes

Please tell us why.

This will require additional consideration from councils, along with more time in collecting and considering additional data, as well as additional training of staff.

23. If there are any additional tools or support that you think you would need to implement this requirement, please tell us in the comment box below.

If such a requirement is to be put in place (e.g. via New Zealand Building Code changes) it is recommended the certification be via an independent third-party certification, ideally via one or more of the green building tools available.

Framework: Whole of Life Embodied Carbon Emissions Reduction

24. Do you agree or disagree that the Building for Climate Change work programme should include initiatives to reduce whole-of-life embodied carbon in New Zealand buildings?

Strongly disagree

Disagree

Neither

Agree

Strongly agree

Please tell us why.

Agree due to the high carbon content in key materials such as steel and concrete.

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

25. What measures, if any, do you think should be put in place to increase building material efficiency? (Select all that apply)

Update regulatory performance requirements to ensure they are appropriate

Incentivise 'lean design'

Remove barriers to the reuse of construction materials

Other (please specify)

Supportive of the construction waste being included in the scope. It will support other initiatives underway by central government and territorial authorities.

For this regulatory mechanism to become an effective tool to reduce construction waste, it needs to

be supported by a network of locally accessible and independently viable resource recovery facilities. Critical to the success of any future recovery facilities will be national governance and innovation to remove barriers that limit the reuse of construction materials, and refinement of the existing regulatory building compliance framework to stimulate the consideration of waste minimisation early on in the design process. Such measures would also work to provide confidence in the reuse market.

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

Refinement of the existing regulatory building compliance framework/District Plan Change will be necessary if we are to effectively change our existing construction waste outcomes in New Zealand. Central Government could also lead by example within the construction waste reduction area and set clear construction waste reduction targets and reporting requirements for public sector construction projects.

27. 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?

Increase the availability of these materials and offer a rebate on them based on the carbon saved compared to other similar high carbon materials.

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.

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

Yes No

Please tell us why.

Further information on the costs and benefits of the cap on whole of life embodied carbon needs to be provided for an informed decision to be made. As noted previously, we believe the key benefits will come from reducing the carbon content of materials used in buildings.

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

Yes No

Please tell us why.

This will be an important information sharing tool.

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

Yes No

Please tell us why.

To provide transparency to the public.

31. Which, if any, of the following factors would make it difficult for people to report the whole-of-life embodied carbon of new buildings, and why?

- Lack of an agreed methodology
- Inadequate data quality and availability
- Lack of appropriate tools or software
- Administrative burden on businesses
- Other (please specify)

The added cost, expertise and resources.

32. What support, if any, do you think will be needed to make reporting embodied carbon a standard part of the design and construction process for every new building project in New Zealand?

Clear identification of the embodied carbon in materials. Dedicated technical support and training for the building and construction industry.

The framework proposes that reporting of whole-of-life embodied carbon for buildings would be carried out as part of the building consent application process.

33. What impact do you think this proposal will have on the Building and Construction sector?

There are concerns that the sector will struggle to interpret and prepare this information, which could lead to delays in building consent approval.

34. What additional tools or support would be needed to implement this requirement?

Adding an additional area of Building Code compliance around carbon is likely to require a significant amount of training/upskilling for staff and in measuring/assessing. It is recommended suitable green building tools be utilised along with independent third-party certification.

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

- No
- Yes

Please tell us why.

At this stage we are supportive of focusing on the initial building life stages as this is where the greatest benefit can be realised.

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

Do you agree with this proposal?

- No
- Yes

Please tell us why.

The cost and time of including these items would not be commensurate with the benefit.

37. Do you think that reporting on, and ultimately capping, embodied carbon should apply to new building projects only, not refurbishment or demolition projects?

No

Yes

Please tell us why.

Refurbishments should be assessed differently - as by not building a new building, emissions are already being saved.

38. The Framework proposes that a simplified embodied carbon calculation tool could be used for small buildings but more detailed calculations would need to be provided for large buildings*.

(* Large and small buildings as defined in the framework scope section)

Do you agree with this proposal?

No

Yes

Please tell us why.

This will be very important in minimising the cost of these requirements and reducing the impact on housing affordability.

39. Any other comments on the proposed frameworks?