REVIEW OF BUILDING CODE DISCUSSION DOCUMENT SUBMISSION FROM BEACON PATHWAY LIMITED

Nick Collins
General Manager
Beacon Pathway Limited
PO Box 11338, Auckland, Business Phone: 021- 464- 252
nickc@beaconpathway.co.nz

I am happy to be contacted about our submission.

About Beacon

Beacon is a residential building industry research consortium aiming to drive sustainability outcomes consistent with New Zealand sustainable development requirements. Beacon is funded by industry, with matched revenue from Government research funds from the Foundation for Research, Science and Technology. There are currently five shareholding partners –Building Research, Scion, New Zealand Steel, Waitakere City Council and Fletcher Building.

Beacon's vision of:

Creating homes and neighbourhoods
that work well into the future
and don't cost the Earth

will be realised through the achievement of the following two goals:

1. To bring the vast majority (90%) of NZ homes to a high standard of sustainability by 2012 and;
2. Every new subdivision and any redeveloped subdivision or neighbourhood from 2008 onwards be developed with reference to a nationally recognised sustainability framework.The consortium has been established to bring about significant improvement in the sustainability of the residential built environment in NZ, by carrying out research, managing resultant Intellectual Property ("IP"), and facilitating development and increased availability of products and systems via emergent markets, through working together with like minded organisations, and by lobbying regulatory authorities .

Beacon intends to develop interventions, which meet sustainability goals in a manner that aligns with consumer lifestyle and choices, achieving home quality and comfort with appropriate affordability.

Beacon is committed to funding research and initiating projects on interventions that will enable a more sustainable residential built environment. This will assist New Zealand consumers to adopt more sustainable residential built environment outcomes, ensuring better returns (social, environment, cultural, and economic) for shareholders, stakeholders and the wider public.

Reason for Submission

Beacon recognises that the Building Code is key to achieving the sustainable development of the built environment and that the Code determines the capability for innovative concepts to be introduced. Beacon recognises that substantial changes to the code are required if Beacon's objectives are to be achieved.

Submission

General Comments

Generally Beacon supports the proposed changes to the Building Code as outlined in the discussion document.

Key general points are as follows:

1. Building Code Structure
If the new Building Code is to use Verification Methods and Acceptable Solutions to provide both performance based requirements and approved prescriptive solutions to the objectives, as the current Code does, it may turn out that the performance based philosophy of the code is underutilised.

Under the current system designers simply use the prescriptive approach as it is normally the path of least resistance. Complying with prescriptive regulations is normally faster, easier and cheaper. An example of this in the current building climate is Clause E2 where the new AS1 has become 'the' compliance method with councils unlikely to accept alternative solutions. The same is true of Clause H1 – Energy Efficiency, and no doubt for many other current clauses. Furthermore, Verification Methods are often poorly understood, or ignored, by those in the industry (including consents officers) and may require specialist knowledge or peer review to show that a detail submitted under a Verification Method is likely to provide at least the performance level of an Acceptable Solution. These factors act to discourage designers from fully utilising the Code's potential for flexibility in design. Verification Methods need to be clearly explained, and easily accessible to those in the industry, and building officials need to freely allow their use.

There also needs to be support for those at local body level when dealing with building solutions 'outside the square'. If innovative alternative solutions are to be implemented, then there needs to be a clear path for acceptance of these. This needs to recognise that as building typologies become more complex, for example with multi level residential and mixed used development becoming more common, there are solutions (which have often been developed overseas) which can be applied here. A good example is atrium assisted ventilation – a useful method for addressing natural ventilation in a noisy environment, but one which has rarely been used in New Zealand.

There has also been a reluctance in the industry to recognise that the Building Code sets the *minimum* requirement for building performance. For this reason the use of staircasing is an innovation that is supported – provided the lowest level is still set to a high environmental standard. The publishing of better and best performance options would enable industry to "gear up" for higher standards, raise awareness and may encourage those in the industry concerned about quality to specify higher levels of performance. Ideally Acceptable Solutions should initially be developed at the "better" level to assist in the promulgation of such approaches, and to pave the way for them becoming mandatory. Such an approach should be undertaken in conjunction with active promotion/ consumer and industry education of the benefits of improved standards.

Improving the minimum standard over time requires extensive long term maintenance and review (of the Code) and ongoing research. The DBH and Government need to be prepared to fund and/or administer this work, possibly over

an extended period. It is important that decisions around performance requirements are made with a true triple bottom line cost benefit analysis, rather than the economic only approach currently utilised.

Few would argue that the Building Code should mandate anything but the minimum standard for buildings. However it is admirable that the Code is now shifting from this focus to take account of a building's 'minimum whole of life effect'. If this, and the use of published 'Code, better, best' levels of building performance, are fully realised in the new Building Code it would represent a great step forward in sustainable development in New Zealand.

2. Don't set the bar too low for environmental standards.

One of the basic premises of the Building Code is that it is a minimum standard, and that people can build to a higher standard if they choose. In practice however in most instances, that choice is not offered to home owners and occupiers. The industry is generally geared up to build to the code requirements as standard, with only a small niche market providing for higher than standard design and construction.

A key issue therefore is that the Code minimums for environmental standards are not set too low, as clearly as been the case for, for example, insulation requirements in the current Building Code.

3. Include provisions for retrofitting of minimum requirements

In terms of the purpose of the Building Act part d states:

> *buildings are designed, constructed and able to be used in ways that promote sustainable development*

Beacon submits that the Building Code is a key tool to ensure that existing buildings, as well as new and retrofitted buildings, are able to be used in ways that promote sustainable development.

There are approximately 1.4 million existing homes in New Zealand and little consideration seems to have been given about improving their performance –yet this is where the greatest challenges lie, and where the biggest opportunities exist to improve sustainability. These homes must be retrofitted to a higher degree of sustainability than the current state if the purpose of the Building Act is to be achieved. The discussion document appears to assume that the Building Code requirements will only be triggered for new buildings, or renovations which meet certain parameters.

It is generally accepted that we have already built most of the buildings that we will use this century. Most of the work in the coming century is likely to be on modifying existing buildings. The Building Code needs to consider this issue of poorly performing, sometimes poorly built existing buildings and provide provision for consequential action. Such action might include, for example, a link with the EECA Home Energy Rating Scheme – where buildings are required to be assessed in terms of compliance with the *current* Building Code at time of sale, at time of change of use (eg from owner-occupier to rental) or at time of rental. This would enable buyers/renters to make an informed choice about occupying a building which is likely to be more expensive to operate and be less healthy and safe. A further step could be to "staircase" this assessment in, requiring some aspects in the future to be retrofitted.

4. Support the Vision of the Home of the Future

The discussion document identifies what the ideal home of the future may look like. The attributes identified strongly align with Beacon's goals and the attributes which have been sought in the development of the NOW Homes in Auckland and Rotorua. Beacon supports this vision, and submits that the new Building Code should reflect this in its content. Generally Beacon is concerned that despite this "vision" the wording of the objectives does not seek to deliver on it.

Beacon notes however that the document does not address the issue of economic sustainability and affordability in a meaningful way. As a result some proposed provisions (for example around universal access) if included would have a significant adverse effect on affordability of homes.

5. Clarity of Relationships Between the Building Code; the Resource Management Act and the Local Government Act need to be Improved

Currently there are poor linkages between the Building Act and Building Code; the Resource Management Act and the Local Government Act.

Building Act and Resource Management Act

For example in the case of multi unit developments such as apartments and medium density housing Beacon research has identified that conflicts between the Building Act and Resource Management Act frameworks can exist.

Because in many instances a Resource Consent is granted *prior* to a building consent, resource consent conditions can effectively demand non-compliance with the Building Code. For example, in Auckland City, noise requirements as set out in its District Plan and Resource Consents for multi unit developments in its high density zones, make implementation of the natural ventilation requirements of the current Building Code difficult. Resource Consents will generally set the building envelope for multi unit development (ie height, depth, number of units etc) and variance from resource consent requirements can be costly and time consuming. Therefore when faced with this situation, anecdotally there are developments have been built which do not comply with existing Building Code requirements. This needs to be remedied.

The draft proposals in the discussion document signal possible involvement of the Building Code in relation to many aspects which are currently managed by Councils through District Plans, for example external noise and threat from flooding. Possible provisions also addressed include aspects around apartment design, such as storage space requirements which have been recently included in some Auckland Council District Plans. There is a need for clarity around where these kinds of provisions lie, at a local or national level. Beacon's view is that generally these matters are better dealt with through mechanisms in the Resource Management Act, allowing locally appropriate management of such issues. For example, many councils consider it appropriate to prevent people building homes within hazard areas such as flood plains or coastal erosion zones, and this mechanism is included in their District Plan. In some instances however (where flooding is a less frequent event eg 100 year flood plains), requirements around freeboard above flood levels are put in place. These approaches are appropriate dealt with through the community consultation process of District Planning. As an aside it is difficult to imagine requiring coastal dwellings for example to be designed to withstand tsunami – the esplanade reserve/strip and riparian/coastal protection mechanisms in the RMA would appear to be a far more practical approach to such an issue.

Building Act and Local Government Act
A potential conflict also exists between the Building Act and the Local Government Act. The Local Government Act does not allow Councils to make Bylaws about matters within the Building Code to a level beyond the Code. If, for example, provisions around water efficiency were introduced in the Code, but these national standards were less than needed in a local situation due to water infrastructure issues, Councils would be unable to introduce bylaws which address this local issue. For example, many Auckland local councils have a bylaw requiring people to install dual flush toilets.

6. Change the Philosophical Approach of the Building Code to one of Enabling an Outcome rather than Minimising the Likelihood that the Outcome Won't Occur
The current Building Code and the proposed Objectives in the discussion document are phrased around a premise of preventing an undesirable outcome rather than promoting a desirable one. This does not sit at all well with the intent of the Act.

For example the proposed Objective for sustainable development is

> *An objective of this building code is to limit the probability that the design, construction or use of the building will not promote sustainable development.*

While it is acknowledged that the Building Code is a document around minimum standards and avoidance of risk, the high level objectives should be phrased around a positive outcome being sought and delivering on the purposes of the Act. So, for example the proposed Objective for sustainable development could be rephrased as follows:

"An objective of this building code is ***to promote sustainable development in the design, construction and use of the building."***

7. Sustainable Development Woven Through the Themes

The requirements for Sustainability have many aspects in common with the three first themes (Safety, Health and Wellbeing). These have been noted in the review document as having 'interdependence' between two or more themes. It has also been noted that there may be cases where the requirements of each theme may be contradictory or work against each other; protecting occupants from hot (or cold) surfaces may require guards/fencing or vent placement which may reduce the system's efficiency, waste management requirements may preclude the use of composting toilets, similarly noise requirements may rule out the use of natural ventilation. Obviously there are many more examples both related and unrelated to sustainability. Care will need to be taken when writing performance requirements that the requirements of each theme complement, rather than contradict, each other as much as possible.

A situation which may arise using this approach is that one aspect of a building or trade is dealt with in a 'bits and pieces' manner. This occurs in the current Building Code in some areas; for example the requirements for lighting are spread over Clause G7 (minimum illuminance [lux] and daylight levels), Clause F6 (emergency lighting for egress) and Clause H1 for the lighting systems energy efficiency. Each clause then refers to a different compliance document. It may be useful to those using the Code (including consents officers) if a reference table was included in the Code documentation which outlined each relevant Operative Requirement for a given building feature.

An example is given below:

Feature	Safety	Health	Wellbeing	Sustainability
. . .	. . .	. . .	. . .	. . .
Lifts				
Lighting	SO2.4.1, SO3.1.3	-	WO3.3.1, WO3.4.1, WO3.4.2	SDO2.3.1
Materials				
. . .	. . .	. . .	. . .	. . .

A similar table would usefully be provided to map the old Building Code to the new one, for ease of transition.

8. Inclusion of a Rating Tool within the Code

Internationally and within New Zealand the development of rating tools for the promotion and quantification of sustainable development is a prominent approach which needs to be taken up in the Building Code. The Home Energy Rating Scheme which is currently being developed by EECA should be included within the Code. New homes should be required to meet a minimum "star" rating in relation to the thermal envelope and water heating. Alternatively a rating tool such as TUSC or BASIX could be provided as a Verification Method.

9. Recognition that many Building Aspects are Determined at a Subdivision / Neighbourhood Level

The Building Code needs to recognise that there are many aspects of an individual building which are actually determined at the neighbourhood design/ subdivision level. For example subdivision lot layout has a direct effect on the ability to orient dwellings for good solar access. This is compounded with more intensive developments such as medium density developments or apartment complexes. In these situations "development wide" features such as solar hot water or rainwater collection are starting to be included. The Code needs to acknowledge these issues which though generally dealt with under the Resource Management Act link through into the individual dwelling.

Sustainable Development
Because many of the sub-sections contained in this theme are new it is difficult to make specific comment as there is little to go on in the way of benchmarks or current compliance documents. The list of objectives in the review document covers the aspects of sustainability which can reasonably be reflected in the Building Code, however Beacon is concerned that by separating these aspects out, rather than threading sustainable development principles throughout the Code it could be seen as a detachable "clip on".

Durability:
This whole area needs to be directly lined with SD 04 as they are fundamentally linked.

It is not stated in the review document however in terms of sustainability the minimum life expectancy of a permanent building should be increased from 50 years. Much of New Zealand's building stock is older than this limit with no sign of demolition. Currently state houses built in the 1960's (therefore approaching the end

of their ‘Code’ life) are much sought after by home buyers. On the face of this, coupled with the new requirements for building adaptation for re-use at the end of their original purpose, the minimum life for houses could be extended to 100 years, possibly greater for commercial buildings.

Some key components of buildings which are not currently considered “structural” and therefore have 5 year life requirements, such as sealant joints in buildings. Beacon submits that it is unreasonable to have to replace these every 5 years as most home owners would not expect to need to do this. Similarly it is unreasonable to set a cladding life expectancy of 15 years. The life expectancy of such components, which contribute to the building envelope should be required to be longer – perhaps through staircasing provisions. Such provisions could allow for basic maintenance, such as painting within this framework.

Energy:
Currently the normal way to meet the requirements for energy efficiency is through providing minimum levels of insulation. It is assumed that a review of the Code will see these minimum levels increased and indeed Beacon submits this is an absolute necessity. It is good to see the review document cover energy end-uses omitted from the current Code.

The review document states that the revised Code would bring about a significant reduction in the use of non-renewable energy for space heating in commercial buildings and water heating in residential buildings. This could be interpreted as ‘encouraging passive solar design’ and ‘mandated solar water heating’ respectively. While the fundamentals of passive solar design are easy to grasp it is a hard concept to prove that a design will actually reduce energy use. One way to do so is through computer simulation by comparing the proposed design with that of a conventional reference building.

This process is currently a Verification Method for Clause H1 – Energy Efficiency (to determine likely annual energy use), however it is underutilised by the construction industry and poorly understood by consents officers. Furthermore the building simulation industry in New Zealand is small and under supported. Should computer simulation become a greater part of the compliance process the industry would need to be provided with more detailed simulation guidelines and weather information.

Mandating solar hot water heating (or encouraging it through legislation in some other way) would significantly reduce the amount of energy used by the residential sector. Beacon notes that in South Australia electric hot water cylinders have recently been banned, and that the application of BASIX as a mandatory requirement in New South Wales has effectively removed electric hot water cylinders from the market. Beacon considers that given electric hot water cylinders’ energy inefficiency – and the high operating costs that their use inflicts upon the consumer, that creating a regulatory framework which removes them from the market would not be unreasonable in New Zealand. As a general principle, Beacon submits that hot water heating does not need to rely on high cost, high quality reticulated energy and the Building Code should discourage systems which rely on this.

Water:
The proposed objectives for water efficiency, re-use and conservation are reasonable, though the waste water re-use objective should be applied to all occupied buildings (currently only relevant to apartments and commercial/industrial buildings). The stormwater disposal section should be called stormwater management and address issues of quality not just quantity. This is also the section where interdependencies need to be carefully resolved as there is the likelihood of quite different, perhaps contrary, requirements with other sections of the Building Code.

The use of 'Water Zones' is hinted at in the review document and this is supported. This would be similar to the Climate Zones currently used in Clause H1 of the Building Code with lower requirements (if any) for areas with adequate water supply. These could then be stepped up at a later date.

There are good arguments for basic water efficiency measures (low flow devices, dual flush toilets) to be used throughout the country, regardless of the security of water supply. Abstraction of water always has an environmental impact which should be minimized. In addition where there is reticulation, maintenance and renewal of water infrastructure has a high cost to the ratepayer, these costs can be reduced if water efficiency measures are in place. Water efficiency also will allow for growth without putting pressure on water supplies and systems. In some instances water efficiency would allow for surplus water to be reticulated to other surrounding areas where water sources may be depleted. Water use results in wastewater production, so water efficiency also results in a reduction in wastewater quantity and the requirement for wastewater treatment and disposal– with associated financial, health and environmental benefits.

This area of the Code also requires support from local councils as they normally administer / maintain mains water supplies. In some cases there is little encouragement from the water supplier, even discouragement, for customers to actively conserve or reduce mains water requirements. Furthermore, some council district plans make the use of rainwater storage difficult as rainwater tanks are included in site coverage areas.

Materials:
The objectives in the materials section are entirely new and therefore can only be commented on in a high level manner. It is considered however that this area should be amalgamated with SD 01 as they are absolutely integrated. The incorporation of whole-of-chain aspects of construction the Building Code are an excellent move and would hopefully encourage thoughtful demolition, and therefore hopefully design for deconstruction and re-use –ie a cradle to cradle approach. This outlook on material use would also encourage suppliers to consider the environmental impacts of their manufacturing processes and methods of disposal. It is likely that consideration of whole-of-chain effects of materials would be difficult to legislate and enforce in practice. It may be possible to restrict or ban the use of certain materials which do not meet certain environmental criteria (such as non renewable energy demand, renewable energy demand, global warming, ozone depletion, eutrophication, acidification, photo-oxidant formation, or the unacceptable depletion of a limited resource). However the data on which to base these criteria is thin and, in many cases, held by the manufacturers themselves.

Not only does the use of recycled materials need to be made easier, but there needs to be greater encouragement for construction waste to be recycled or disposed of properly. Stating that new buildings use a minimum level of recycled materials is

getting too simplistic and could result in construction sites being treated as rubbish tips as all waste material is indiscriminately thrown into the hardfill.

Culture:
Most definitions of sustainability (including Brundtland's cited in the review document) are forward looking; however culture (or heritage) is still an important aspect of sustainability, often referred to as the 'fourth bottom line'. For this reason the preservation of buildings with specific significance should be present in the Building Code.

Where possible buildings with cultural, historical or heritage value should be upgraded to meet current Building Code standards; partly to extend their life, partly as a matter of safety for the occupants. It is recognised that these buildings are often harder to bring up to current minimum standards. The Building Code should include provisions to allow these buildings to be excluded from these standards on a case by case basis, if it is deemed impractical to retrofit to current minimum levels of performance. Note that care would need to be taken to ensure such a provision is not used as a 'get out' clause by those not wanting to retrofit a building which is simply old. At some point old buildings do reach the end of their useful / viable life and require demolition, or more correctly, recycling.

Other Themes
As stated above some performance requirements in the other themes of the review document are represented within the Sustainability theme. It is assumed that the ongoing review process will address these interdependencies accordingly.

Both the Health and Wellbeing themes contain performance requirements relating indoor environment which are a function of how a building is used by its occupants. This is problematic as the Building Code only has jurisdiction during the construction process and therefore can only control the likelihood that a building could be used in an undesirable or unhealthy way. Again, the likely performance of a building can be assessed using computer simulation to determine the proportion of time the internal environment is outside a certain comfort range. It would be possible to state a minimum performance requirement for internal temperature of 'n' hours per year under $18^{o}C$ to be assessed by computer simulation. Some building simulation software can also track indoor humidity and CO_2 levels.

As an aside relating to heating, indoor air quality and health; unflued LPG and natural gas heaters have negative effects on the building fabric, air quality and the human respiratory system. The use of these heaters should be legislated against (as in Australia).

Response to Specific Questions included in the Discussion Document

STRUCTURAL SAFETY

1) Do you agree with the proposed objectives for structural safety?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

2) Do you agree with the proposed features to address structural safety?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

3) How important do you think it is for the Building Code to make provision for buildings at risk of tsunami?

Very **Somewhat** **Not very** ✓**Definitely not** **No opinion**

4) Do you have any suggestions on ways to address the issue of buildings at risk of tsunami?

This is a matter which is best dealt with in District Plans through the RMA processes.

5) How important do you think it is for the Building Code to make provision for buildings at risk of flooding?

Very **Somewhat** **Not very** ✓**Definitely not** **No opinion**

6) Do you have any suggestions on ways to address the issue of buildings at risk of flooding?

This is a matter which is best dealt with in District Plans through the RMA processes. Most District Plans already include provisions on this, and councils identify buildings at risk of flooding in their hazard registers.

7) How important do you think it is for the Building Code to make provision for buildings at risk of coastal erosion?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

8) Do you have any suggestions on ways to address the issue of buildings at risk of coastal erosion?

This is a matter which is best dealt with in District Plans through the RMA processes.

9) How important do you think it is for the Building Code to make provision for buildings at risk of landslides?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

10) Do you have any suggestions on ways to address the issue of buildings at risk of landslides?

This is a matter which is best dealt with in District Plans through the RMA processes.

11) How important do you think it is for the Building Code to make provision for buildings at risk of volcanic activity?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

12) Do you have any suggestions on ways to address the issue of buildings at risk of volcanic activity?
This is a matter which is best dealt with in District Plans through the RMA processes.

13) How important do you think it is for the Building Code to make provision for buildings at risk of wildfire?

Very ✓**Somewhat** **Not very** **Not at all** **No opinion**

14) Do you have any suggestions on ways to address the issue of buildings at risk of wildfire?

15) Is there anything else about structural safety you think the Building Code should make provision for?

FIRE AND OTHER EMERGENCY SAFETY

16) Do you agree with the proposed objectives for fire and other emergency safety?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

17) Do you agree with the proposed features to address fire and other emergency safety?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

18) How important do you think it is for the Building Code to make provision for fire safety measures in houses?

Very ✓**Somewhat** **Not very** **Not at all** **No opinion**

19) Do you have any suggestions on ways to address the issue of fire safety measures in houses?

Require fire alarms to be wired into all new homes and additions.

Many people are not killed by fire in buildings but by toxic fumes from building materials and building contents in the event of a fire. Testing for building materials to establish their toxic load in the event of fire and to set safe standards for this is suggested. For instance it is well known that PVC materials emit dioxins when burnt and that even small amounts of dioxin materials are lethal. Yet there is no control of PVC pipes, electrical wire sheathing, wall linings, flooring etc.

20) How important do you think it is for the Building Code to explicitly require a means of emergency egress from buildings that is accessible to people with disabilities?

Very ✓**Somewhat** **Not very** **Not at all** **No opinion**

21) Do you have any suggestions on ways to address the issue of emergency egress from buildings for people with disabilities?

22) Is there anything else about fire and other emergency safety you would like the Building Code to make provision for?

SAFETY IN USE

23) Do you agree with the proposed objectives for safety in use?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

24) Do you agree with the proposed features to address safety in use?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

25) How important do you think it is for the Building Code to make provision for protection of people from noise emitted by fire alarms?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

26) Do you have any suggestions on ways to address the issue of protection of people from noise emitted by fire alarms?

27) How important do you think it is for the Building Code to make provision for protection of people from hot and cold surfaces?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

28) Do you have any suggestions on ways to address the issue of protection of people from hot and cold surfaces?

Needs to be reasonable. People, including quite small children, can learn about this issue fairly easily.

29) Is there anything else about safety in use you would like the Building Code to make provision for?

SANITATION

30) Do you agree with the proposed objectives for sanitation?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

31) Do you agree with the proposed features to address sanitation?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

32) How important do you think it is for the Building Code to make provision for storage space for waste and cleaning equipment?

Strongly **Somewhat** **Not really** ✓**Definitely not** **No opinion**

33) Do you have any suggestions on ways to address the issue of storage space for waste and cleaning equipment?

34) Is there anything else about sanitation you think the Building Code should make provision for?

Need to ensure that the sanitation section does not prevent innovative sustainable practice by being too ridgid. This section needs to provide for innovative wastewater treatment and reuse of rain and greywater. It would be useful to have some standard clauses for the re-use of greywater and rainwater harvesting and also for dual supply (potable water and water for non drinking purposes).

INDOOR CONDITIONS

35) Do you agree with the proposed objectives for indoor conditions?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

36) Do you agree with the proposed features to address indoor conditions for health?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

We are concerned that “prevention of draughts” could equate to “no openable windows” or “no passive vents”. This would be a very unacceptable outcome.

37) How important do you think it is for the Building Code to make provision for controlling moisture generated by the use of fixtures and appliances (e.g. showers, cooking facilities, gas stoves, clothes dryers and unflued gas heaters)?

✓ **Very** **Somewhat** **Not very** **Not at all** **No opinion**

38) Do you have any suggestions on ways to address the issue of controlling moisture generated by the use of fixtures and appliances (e.g. showers, cooking facilities, gas stoves, clothes dryers and unflued gas heaters)?

There is a need to ensure that these are able to be met by passive means. Unflued gas heaters should just be banned.

39) How important do you think it is for the Building Code to extend the provision for a minimum indoor temperature beyond aged care facilities and early childhood centres to housing or other occupied buildings?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

40) Do you have any suggestions on ways to address the issue of minimum indoor temperature?

Encourage use of passive solar design principles to maximise natural heating, e.g. site orientation to achieve best sunlight; heat absorbing/releasing construction materials.

Develop clauses so that the aim is to have a space that is heatable to a certain minimum temperature at reasonable cost, rather than require in-built heating systems.

41) How important do you think it is for the Building Code to provide for a maximum indoor temperature?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

42) How important do you think it is for any provision for maximum indoor temperature to apply beyond aged care facilities and early childhood centres to housing or other occupied buildings?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

We don't need rules which mean we need air conditioning systems in every house.

43) Is there anything else about indoor conditions for health you think the Building Code should make provision for?

ACCESSIBILITY

44) Do you agree with the proposed objectives for accessibility?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

45) Do you agree with the proposed features to address accessibility?

Strongly **Somewhat** ✓ **Not very** **Definitely not** **No opinion**

46) How important do you think it is for the Building Code to make provision for the front door of every residential unit (including apartments) to meet accessibility requirements?

Strongly **Somewhat** **Not really** ✓**Definitely not** **No opinion**

While it is recognised that a number of people with disabilities may need to modify their houses to accommodate their needs it would be unduly restrictive to require access to all houses. This is the area with the greatest chance of making houses unaffordable. Many design things can be done at initial build without hugely extended cost. But if every house has to be wheelchair accessible, it creates much greater 'dead' corridor spaces in multi-occupancies, and limits the sections in a place like Wellington where buildings can be put.

47) Do you have any suggestions on ways to address the issue of accessibility to the front door of residential units (including apartments)?

48) How important do you think it is for the Building Code to make provision for residences to be easily adapted to provide accessibility in the future?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

This would be a good alternative to the suggestion in 46 above.

49) Do you have any suggestions on ways to address the issue of residences being easily adapted to provide accessibility in the future?

Minimum corridor widths/doorway widths that would accommodate the use the wheelchairs without major modifications to the structure of the building. This needs to

be carefully considered however as it could add significant additional cost into a dwelling.

50) How important do you think it is for the Building Code to make provision for universal design for all residences?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

51) Do you have any suggestions on ways to address the issue of universal design for all residences?

52) How important do you think it is for the Building Code to make provision for public buildings to be provided with features that assist people with visual disability?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

53) Do you have any suggestions on ways to address the issue of public buildings being provided with features that assist people with visual disability?

54) How important do you think it is for the Building Code to make provision for public buildings to be provided with features that assist people with intellectual disability?

Very **Somewhat** **Not very** **Not at all** ✓**No opinion**

55) Do you have any suggestions on ways to address the issue of public buildings being provided with features that assist people with intellectual disability?

56) Is there anything else about accessibility you think the Building Code should make provision for?

PROTECTION FROM NOISE

57) Do you agree with the proposed objectives for noise?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

58) Do you agree with the proposed features to address noise?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

59) How important do you think it is for the Building Code to make provision for protection from high noise level sources external to the building? Not very

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

This is currently addressed through District Plans created under the Resource Management Act 1991.
Currently there are conflicts in some local council areas between the RMA Noise Requirements and Building Code Natural Ventilation requirements. If this is to be included in the Building Code it should not result in a requirement of achieving ventilation without opening windows near busy roads, therefore forcing people into air-conditioning.

60) Do you have any suggestions on ways to address the issue of protection from high noise level sources external to the building?

Use of Atrium Assisted Ventilation could be developed as an Acceptable Solution to provide for both noise mitigation and natural ventilation.

61) How important do you think it is for the Building Code to make provision to prevent noise between habitable spaces and other parts of the building?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

62) Do you have any suggestions on ways to address the issue of preventing noise between habitable spaces and other parts of the building?

63) How important do you think it is for the Building Code to make provision for the acoustic environment within particular types of buildings such as learning institutions (for example, schools, kindergartens, tertiary institutions, wa - nanga)?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

64) Do you have any suggestions on ways to address the issue of the acoustic environment within particular types of buildings such as learning institutions (for example, schools, kindergartens, tertiary institutions, wa - nanga)?

65) Is there anything else about noise you think the Building Code should make provision for?

There is an inevitable trade-off between noise and natural ventilation, especially in multi unit apartment buildings. Solutions which provide for both should be promoted, otherwise air-conditioning units will be installed at high cost to the building occupier and the environment. With regard to the occupier, having the ability to open windows is a mental (and physical) health issue as well as a financial one. Many multi-unit dwellings in high noise areas are being built for lower income groups who may not be able to afford to run air conditioning systems. People should not be forced to live in dwellings where they are not able to open windows but cannot afford to ventilate their homes mechanically.

INDOOR ENVIRONMENT

66) Do you agree with the proposed objectives for the indoor environment?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

67) Do you agree with the proposed features to address the indoor environment for wellbeing?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

68) How important do you think it is for the Building Code to make provision for natural ventilation in buildings when windows are closed?

✓**Very** **Somewhat** **Not very** **Not at all** **No opinion**

69) Do you have any suggestions on ways to address the issue of natural ventilation in buildings when windows are closed?

Use of passive window vents.

70) How important do you think it is for the Building Code to make provision for a comfortable rather than a minimum indoor air temperature in housing or any other occupied buildings?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

We do not need rules which mean more people will install air conditioning units.

71) Do you have any suggestions on ways to address the issue of a comfortable rather than a minimum indoor air temperature in housing or any other occupied buildings?

Place an emphasis on passive solar design and providing an environment where heating requirements are low. The Beacon Auckland NOW Home has been

designed to require no additional heating in winter (or cooling in summer). Where climate means that heating will be required in winter, then the focus should be on directing users to safe, low cost forms of heat such as pellet burners and low emission wood burners, rather than higher cost (to the consumer and the country) reticulated heating systems.

72) How important do you think it is for the Building Code to make provision for natural light and awareness of the outdoors in living areas and bedrooms in residential buildings?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

73) Do you have any suggestions on ways to address the issue of natural light and awareness of the outdoors in living areas and bedrooms in residential buildings?

74) How important do you think it is for the Building Code to make provision for security against unwanted entry?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

75) Do you have any suggestions on ways to address the issue of security against unwanted entry?

76) Is there anything else about indoor environment for wellbeing you think the Building Code should make provision for?

SERVICES

77) Do you agree with the proposed objectives for services?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

78) Do you agree with the proposed features to address services for wellbeing?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

WO4.1.2 is excessive and works against self collection and use – potable is the test.

79) How important do you think it is for the Building Code to extend the requirement for hot water for personal hygiene to include workplaces that contain personal hygiene facilities?

Very ✓**Somewhat** **Not very** **Not at all** **No opinion**

80) Do you have any suggestions on ways to address the issue of hot water for personal hygiene in workplaces that contain personal hygiene facilities?

81) How important do you think it is for the Building Code to make provision for colour, odour or taste of potable water?

Very **Somewhat** **Not very** ✓ **Not at all** **No opinion**

This should not be used as a mechanism to push people towards greater reticulation of water, or a barrier to establishing rainwater use in urban situations..

82) Do you have any suggestions on ways to address the issue of colour, odour or taste of potable water?

83) How important do you think it is for the Building Code to make provision for the location and number of socket outlets and light switches in residential buildings?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

This is may be a factor to enable future flexibility in the use of the building.

84) Do you have any suggestions on ways to address the issue of location and number of socket outlets and light switches in residential buildings?

85) Is there anything else about services you think the Building Code should make provision for?

It needs to be ensured that the objectives around minimum flow and temperature align with the sustainability aims of the Act, in that they do not result in water wastage or unnecessary heating of water, such as solar electric back up. The current "health" barriers to, for example, composting toilets and urban rainwater collection and use should be removed.

FACILITIES

86) Do you agree with the proposed objectives for facilities?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

87) Do you agree with the proposed features to address facilities for wellbeing?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

88) How important do you think it is for the Building Code to make provision for habitable spaces in all residential buildings to have sufficient space for activity, furniture and personal needs?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

89) Do you have any suggestions on ways to address the issue of habitable spaces in all residential buildings having sufficient space for activity, furniture and personal needs?

90) How important do you think it is for the Building Code to make provision for storage facilities for personal effects in all residential buildings?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

91) Do you have any suggestions on ways to address the issue of storage facilities for personal effects in all residential buildings?

Overhead cupboards in the 'dead space' above wardrobe areas.

92) Is there anything else about facilities you think the Building Code should make provision for?

DURABILITY

93) Do you agree with the proposed objectives for durability?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

The wording needs changing, maybe to: *"An objective of the BC is to ensure that the design, construction or use of the building promotes sustainable development/ sustainable development opportunities"*

94) Do you agree with the proposed features to address durability?

Strongly ✓ **Somewhat** **Not really** **Definitely not** **No opinion**

95) How important do you think it is for the Building Code to make provision for a maintenance plan?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

96) Do you have any suggestions on ways to address the issue of a maintenance plan?

Without a building warrant of fitness system any maintenance requirement in the code is useless as there is no mechanism for ensuring compliance.

97) Is there anything else about durability you think the Building Code should make provision for?

The minimum life expectancy of a residential dwelling should be increased from 50 years to 100 years. People expect that their home should last their lifetime.

ENERGY

98) Do you agree with the proposed objectives for energy?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

The wording needs changing, maybe to: *"An objective of the BC is to ensure that the use of energy which arises from the design, construction or use of the building promotes sustainable development/ sustainable development opportunities"*

99) Do you agree with the proposed features to address energy?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

100) Do you have any suggestions about how the Building Code can minimise energy consumption?

Passive solar design to maximise natural light, ventilation and heating from solar sources.

101) Do you have any suggestions about how the Building Code could promote the use of renewable energy?

Inclusion of a Home Energy Rating Scheme within the Code.

Banning new installations of electric hot water cylinders as recently occurred in South Australia.

Promoting solar hot water, wetbacks, pellet burners and low emission wood burner solutions as preferred options. As a key principle interior heating and hot water heating systems should not rely on high cost, high quality reticulated energy (which should be used to run our Microwave Ovens), but instead low cost, low quality non-reticulated energy.

102) Is there anything else about energy you think the Building Code should make provision for?

WATER

103) Do you agree with the proposed objectives for water?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

There needs to be a change in the wording and focus towards the sustainable management of water, rather than just limiting it to inefficient use. SD03.1.4 should be called Stormwater management rather than disposal.

104) Do you agree with the proposed features to address water?

✓ **Strongly** **Somewhat** **Not really** **Definitely not** **No opinion**

105) How important do you think it is for the Building Code to make provision for water efficiency in areas where there are no water shortages?

✓ **Very** **Somewhat** **Not very** **Not at all** **No opinion**

- While there may be no water shortages in some areas from a human perspective, abstraction of water always has environmental impacts which should be minimised. In addition maintenance and renewal of water infrastructure has a high cost to the ratepayer, these costs can be reduced if water efficiency measures are in place.
- Many water efficiency measures (eg dual flush toilets, low flow devices) have no additional cost to the consumer).
- Water efficiency also will allow for growth without putting pressure on water supplies and systems.
- In some instances water efficiency would allow for surplus water to be reticulated to other surrounding areas where water sources may be depleted.
- Water use results in wastewater production, so water efficiency also results in a reduction in wastewater and wastewater treatment and disposal requirements– with associated financial, health and environmental benefits.

106) Do you have any suggestions on ways to address the issue of water efficiency in areas where there are no water shortages?

As above. Low flow fittings and dual flush toilets should be a New Zealand wide minimum standard.

107) How important do you think it is for the Building Code to make provision for minimising the consumption of water from network utility operators in areas of water shortage?

✓ **Very** **Somewhat** **Not very** **Not at all** **No opinion**

108) Do you have any suggestions on ways to address the issue of minimising the consumption of water from network utility operators in areas of water shortage?

Installation of low flow water devices to specified fittings.
Specify maximum flow rates from fittings.

109) Is there anything else about water you think the Building Code should make provision for?

Provide standard solutions for rainwater tanks and greywater re-use in reticulated areas (how to do it safely, not compromise the town supply, separating drinking from non potable uses such as toilet flushing and garden watering.) Up to 60% of water use in most New Zealand homes does not require potable water.

MATERIALS

110) Do you agree with the proposed objectives for materials?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

111) Do you agree with the proposed features to address materials?

Strongly ✓**Somewhat** **Not really** **Definitely not** **No opinion**

There should be a focus on Life Cycle Analysis within the materials area. This could be a "staircased" feature, whereby in, say 5 years time, all materials are required to have undertaken a Life Cycle Analysis.

112) How important do you think it is for the Building Code to make provision for banning the use of some non-sustainable materials (eg, certain timbers) ?

Very **Somewhat** ✓ **Not very** **Not at all** **No opinion**

113) Do you have any suggestions on ways to address the issue of banning the use of some non-sustainable materials (e.g., certain timbers)?

It is important to use credible certification. You could require the use of plantation timbers or those accredited by the Forest Stewardship Council Certification system (or equivalent independent scheme). This would need to be introduced as a "staircased" mechanism, as the industry is not well positioned to deal with this kind of regulation at present.

114) How important do you think it is for the Building Code to make provision for minimising waste generation during construction and demolition through a waste management plan?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

115) Do you have any suggestions on ways to address the issue of minimising waste generation during construction and demolition?

Requiring a waste minimisation plan.. Requiring large scale developments to adhere to REBRI guidelines. Any mechanisms in the Code should be consistent with the NZ Waste Strategy and any legislation around waste (eg if the Greens Bill becomes law)

116) Is there anything else about materials you think the Building Code should make provision for?

The use of recycled materials needs to be made easier. There also needs to be greater encouragement for construction waste to be recycled or disposed of properly. Stating that new buildings use a minimum level of recycled materials is getting too simplistic and could result in construction sites being treated as rubbish tips as all waste material is indiscriminately thrown into the hardfill.

PROTECTION OF OTHER PROPERTY

117) Do you agree with the proposed objectives for protection of other property?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

118) Do you agree with the proposed features to address protection of other property?

Strongly **Somewhat** ✓ **Not really** **Definitely not** **No opinion**

SD05.3.1 could include aspects of site development and earthworks in preparation for construction.

119) How important do you think it is for the Building Code to make provision for any other areas relating to the protection of other property (aside from those included in the current Code)?

Very **Somewhat** **Not very** ✓**Not at all** **No opinion**

120) Do you have any suggestions on ways to address other areas relating to the protection of other property (aside from those included in the current Code)?

121) Is there anything else about protection of other property you think the Building Code should make provision for?

Need to ensure that stormwater related clauses also relate to sustainable stormwater management. The requirement should not be to always discharge to a pipe!

BUILDINGS WITH CULTURAL, HISTORICAL OR HERITAGE VALUE AND TRADITIONAL AND CULTURAL USE OF BUILDINGS

122) How important do you think it is for the Building Code to treat buildings with cultural, historical or heritage value differently from similar buildings without that value?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

123) Do you have any suggestions on ways to address the issue of buildings with cultural, historical or heritage value?

124) How important do you think it is for the Building Code to treat buildings with special traditional and cultural aspects of the intended use differently from similar buildings?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

125) Do you have any suggestions on ways to address the issue of buildings with special traditional and cultural aspects of the intended use?

There needs to be a strong measure of consistency between the Building Code, the Historic Places Act and the Resource Management Act on this issue.

STRUCTURE OF THE BUILDING CODE

126) Do you have any comments about how the proposed Building Code objectives are aligned with the purposes of the Building Act?

If the purposes of the Act are to be achieved then aspects of the Building Code should ply to existing buildings, not just new and renovated buildings. Would like to see more of an emphasis on sustainable water management (storm, potable and waste), rather than just water efficiency.

127) Do you agree the Building Code should be structured in the same way?

Very ✓ **Somewhat** **Not very** **Not at all** **No opinion**

128) Do you have any comments about the 'what', 'how much', 'where' model for performance criteria?

129) Do you have any suggestions about general overarching principles that should be incorporated into the Building Code?

130) Do you have any comments about the general principles for performance criteria?

131) Do you have any comments on the possible 'stair casing' of performance criteria?

This is strongly supported and would be a good way of dealing with, for example, water efficiency eg requiring a the first "step" all buildings to have minimum water efficiency requirements such as dual flush toilets and low flow fittings, with these requirements ramped up over time. Staircasing should not however be used to set the bottom "step" lower than would otherwise occur. For example current insulation standards are inadequate and should be increased significantly as a minimum requirement. Generally the approach should be that staircasing allows for the industry to ramp up its capability to deliver on the higher standard, eg Life Cycle Analysis for materials. Acceptable Solutions should be for the "higher step" on the staircase to encourage the shift to the next level ahead of the regulatory requirement.

132) Do you have any comments about the proposal for a Housing Acceptable Solution?

Good idea. A separate minor buildings acceptable solution would also be useful.

133) Do you have any comments on the possible incorporation of 'acceptable', 'better' and 'best' methods of compliance in the Acceptable Solutions?

Acceptable Solutions should be developed for the "better" and "best" methods – but not for the "acceptable" – this would create a framework where it was easier to build to a higher standard, but building to the minimum was still an option. It would also ease the transition of staircased options as a certain sector of the industry would take the "path of least resistance" and build at the better or best level.

It would be useful if this information was recorded on the property file and available through LIM reports to home buyers, giving people a better idea about the quality of the building they are about to purchase.