

## Auckland Regional Public Health Service

Rātonga Hauora ā Iwi o Tamaki Makaurau



Working with the people of Auckland, Counties Manukau and Waitemata

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Building for the 21<sup>st</sup> Century: Review of the Building Code  
Discussion Document for Consultation  
Building Code Review  
Department of Building and Housing  
PO Box 10-729  
Wellington

### Submission from the Auckland Regional Public Health Service on Building for the 21<sup>st</sup> Century: Review of the Building Code

1. Thank you for the opportunity for the Auckland Regional Public Health Service to provide a submission on Building for the 21<sup>st</sup> Century: Review of the building code.
2. This submission represents the views of the Auckland Regional Public Health Service (ARPHS). ARPHS provides public health services for the three district health boards in the Auckland region (Auckland, Counties Manukau and Waitemata District Health Boards), with the primary governance mechanism for ARPHS resting with Auckland District Health Board. This submission represents the views of ARPHS and does not necessarily represent the views of the three District Health Boards.
3. ARPHS understands that all submissions will be available under the Official Information Act 1982, except if grounds set out under the Act apply.
4. The primary contact point for this submission is:

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## ***Introduction***

5. ARPHS is a regional public health service provider and works towards improving, promoting and protecting the health of people in the Auckland Region. ARPHS has an active commitment to working with central and local government, other health service providers, iwi and local communities to develop effective strategies to promote and protect the health of the people of the Auckland region.
6. ARPHS takes a whole-of-population approach but targets resources to those locations and people who will benefit the most. ARPHS operates in an outcomes-based framework, which reflects the reality that it cannot create public health by itself but must work with a range of partners in a whole-of-community approach to achieve the public health ends sought. ARPHS has identified six vital few outcomes to be the focus of its efforts:
  - Reduction in the incidence and impact of infectious disease.
  - Reduction in the incidence and impact of obesity, diabetes and cardiovascular disease.
  - Reduction in the incidence and impact of tobacco and alcohol related harm.
  - Reduction in the incidence and impact of cancer.
  - Reduction in the incidence and impact of environmental inequalities.
  - Reduction in the adverse effects of environmental hazards.
7. The significant differences in health status between Māori and non-Māori are unacceptable and cannot continue. Redressing these inequalities requires deliberate, evidence based, multi-pronged activities that are whānau ora focused.
8. ARPHS aims to do more to better support equity in health status across the Auckland region, over the medium to long term. ARPHS will continue to provide core public health services, working with other sectors on activities that are based on evidence, innovation and good knowledge of the communities it works with. ARPHS aims to co-ordinate its efforts to ensure that it targets resources appropriately across the region. Māori health improvements will translate into improved health for others in the community and contribute to a higher level of health status for the Auckland population at large.

## ***Building for the 21st Century Questions***

9. This submission follows the format of the questions contained in the Building for the 21st Century: Review of the building code discussion document.

### **Type One Changes**

#### Safety in Use

#### **Question 4: What comments do you have about the performance requirements we are considering for barriers?**

10. ARPHS applauds and strongly supports the clarification and specification of performance requirements.

#### **Question 5: What comments do you have about the performance requirements we are considering for lighting?**

11. ARPHS supports the proposal to include lighting.

#### Indoor Climate

#### **Question 7: What comments do you have about the performance requirements we are considering for indoor air quality?**

12. ARPHS believes it is important to pursue all possible control measures for indoor air quality. This may be through processes of design and construction or through regular performance checks when the system is in operation.
13. ARPHS supports the possible changes such as mechanical air-handling systems to be constructed and maintained in a manner that reduces the likelihood of harmful bacteria, pathogens and allergens multiplying within them, and the method that is able to dispose of contaminated air to avoid creating a nuisance or hazard to people and other property and the likelihood of falsely triggering smoke detectors.
14. It is suggested that a performance requirement that considers a means to monitor key pollutants is introduced. For example, buildings may achieve this using a mechanism designed to self-sensor internal levels of key pollutants and automatically activate when set levels or benchmarks are exceeded. The sensor's trigger could activate an audible alarm to advise residents, to cover for situations where manual/non-mechanical means of ventilations are present.

#### **Question 8: What comments do have about the performance requirements we are considering for internal moisture control?**

15. ARPHS supports the performance requirements for internal moisture control. As suggested earlier for indoor-air quality, it would be important also to have a performance requirement that considers a means to monitor, in this case for moisture levels. For example, buildings may achieve this using a mechanism designed to self-sensor internal moisture levels and automatically

activate to remove unnecessary moisture when ideal moisture levels or benchmarks are exceeded.

### Sanitation

#### **Question 9: What comments do you have about the performance requirements we are considering for wastewater disposal?**

16. These measures are supported by ARPHS. Given the high risks associated with human contact of high microbial pathogen loads typical of wastewater, measures to prevent such contact are essential. Also essential is the prevention of transmission of disease via insect vectors or animal contact with wastewater.
17. Poorly designed, installed or maintained on-site wastewater disposal systems may lead to increased human, animal and insect vector contact with inadequately treated wastewater, resulting in the spread of infectious disease. Inadequately treated wastewater from on-site systems may contribute to contamination of surface waters through wastewater breakout to the surface and subsequent runoff or through percolation to groundwater or aquifers. This will then impact on any drinking water supplies sourced from these waters.
18. The requirement for safe and secure storage of collected materials associated with the use of composting toilets is supported by ARPHS. Such material is considered as a hazardous waste due to its pathogenic micro-organism content.

#### **Question 10: What comments do you have about the performance requirements we are considering for solid waste disposal?**

19. ARPHS supports the requirements outlined for solid waste disposal.
20. Solid waste consists of a variety of components that may include hazardous substances and constituents that may attract vermin and insects capable of acting as vectors for disease.
21. Any creation of a storage area for solid waste must consider security in terms of minimising human contact with waste and preventing access by vectors and animals to waste.
22. Storage should be constructed to avoid likelihood of odour or nuisance.

#### **Question 11: What comments do you have about the performance requirements we are considering for industrial liquid waste disposal?**

23. ARPHS supports the performance requirements outlined for industrial liquid waste. Liquid industrial wastes have the potential to contaminate water supplies via migration to groundwater and aquifers and to contaminate land with concomitant impacts on health. The nature and degree of contamination is related to the nature of the waste and to the degree of exposure. Measures to prevent such contamination and to prevent human contact to such wastes are essential.

**Question 12: What comments do you have about the performance requirements we are considering for personal hygiene facilities?**

24. ARPHS supports the performance requirements suggested for personal hygiene facilities. The provision of clean and hygienic personal hygiene facilities is required to reduce the risk of communicable disease spread. This reduction is important for vulnerable groups and for people who congregate in close proximity.
25. Personal hygiene facilities must be accessible to people with disabilities.
26. All basins, showers and baths should be provided with both hot and cold water.

**Question 13: What comments do you have about the performance requirements we are considering for laundering facilities?**

27. ARPHS supports the performance requirements suggested for laundering facilities.

**Question 14: What comments do you have about the performance requirements we are considering for food preparation facilities?**

28. ARPHS generally supports the performance requirements for food preparation facilities. Facilities that are constructed in such a way and of suitable materials can assist in providing an environment that discourages the growth and persistence of pathogenic organisms.
29. In addition to the maintenance of hygienic conditions, consideration must be given to design that has injury prevention in mind.
30. Provision of dedicated hand washing facilities in a kitchen would provide additional opportunity to engage in hand washing prior to food preparation or handling.

**Question 15: What comments do you have about the performance requirements we are considering for protection of water quality?**

31. ARPHS supports the performance requirements relating to protection of the water quality. These requirements will protect both the mains supply (presumably via backflow protection) and the water at the tap. Drinking Water Standards operating in New Zealand assist operators in the provision of potable water to the property boundary.
32. For self-supplied properties the Drinking Water Standards do not apply. Performance requirements as outlined would assist in the ability of such to source and maintain a supply that more closely resembles the potability of reticulated supplies. This may be achieved through utilisation of components that are safe (e.g. are not plumbosolvent), via the use of equipment such as first flush diverters, the installation of treatment systems (e.g. filter/UV) and by using protected storage facilities.

**Question 16: What comments do you have about the performance requirements we are considering for distinguishing between drinking and non-drinking water systems?**

33. ARPHS supports the requirements outlined. In addition ARPHS would like to see a form of differentiation between the two water systems continuous along the entire length to minimise any possibility of cross connection (i.e. as proposed by Type 2 changes). The use of distinctive fittings on the non-potable supply may go some way to further minimise the possibility of this.

**Question 17: What comments do you have about the performance requirements we are considering for preventing the growth of harmful organisms in stored heated water?**

34. ARPHS supports the performance requirements. A minimum storage temperature of 60° C will effectively inhibit the multiplication of organisms such as legionella within the heating/storage cylinder. The water temperature must be modified through the addition of tempering valves in order to prevent scalding/burning of users at the tap. In addition, attention to maintaining reticulation of hot water into runs as short as possible may reduce any possibility of legionella colonisation within the piping.

Features for wellbeing and physical independence

**Question 18: What comments do you have about the performance requirements we are considering for wayfinding provisions in the Building Code?**

35. ARPHS supports the performance requirements regarding the provision of 'signs, lighting or other means'. ARPHS would like to see clarification of 'other means' with examples that would meet the safety needs of visually impaired people.
36. ARPHS supports the requirement for wayfinding for people of all abilities including visual, deaf, intellectual impairment and those who have fewer language skills. This enables all people to use buildings as independently as possible.

## **Type Two Changes**

### Safety in Use

**Question 33: What comments do you have about the performance requirements we are considering for restricting access to hot surfaces for buildings with vulnerable populations?**

37. ARPHS strongly supports the performance requirements for restricting access to hot surfaces for buildings with vulnerable populations.

**Question 34: What comments do you have about the change we are considering to align the Building Code requirements for hazardous substances with the Hazardous Substances and New Organisms Act 1996?**

38. ARPHS believes the Environmental Risk Management Authority NZ (ERMANZ) is the appropriate NZ authority to comment on this section.
39. ARPHS is aware that the HSNO Act deals with a wider range of hazardous substances than referred to in the consultation document (i.e. toxic or corrosive hazardous substances), but does not include manufactured articles (i.e. asbestos containing materials, copper, chrome, arsenic, and CCA-treated timber).
40. ARPHS requests that where practicable, consideration should be given to setting appropriate controls for all hazardous substances. This includes those contained in building construction materials or those that are to be stored or used in the built environment.
41. This would reduce potential human health exposures that may negatively impact on health or contaminate the built physical environment for future generations. Potential contaminants include: lead, tin, copper and asbestos-based materials.

**Question 35: What comments do you have about the performance requirements we are considering for a maximum sound level for fire alarms and other alarms used for evacuation?**

42. Alarms provide an effective method of alerting building inhabitants to emergencies. There have been efforts in New Zealand and overseas to develop standards for fire alarms to ensure that adverse impacts of noise are minimised. ARPHS supports the proposed performance requirement for maximum sound levels based on the current New Zealand Standard for Fire Alarms.

### Indoor Climate

**Question 36: What comments do you have about the performance requirements we are considering for indoor air quality?**

43. ARPHS partially supports the performance requirements proposed.
44. ARPHS strongly recommends that the Building Code explicitly requires that no asbestos should be used as material in construction, rather than the

building requiring 'no fibers' to be present. The World Health Organisation indicates there is no safe level for this carcinogen. While no fibers may be present when asbestos sheets are intact, the presence of asbestos material in a building can lead to future exposure and environmental contamination, and hence a full ban on asbestos use needs to be explicitly stipulated in the revised Building Code to prevent this risk.

45. ARPHS also notes that there are no requirements for PM10 when this type of particulate matter is of great health concern, and there are available guideline values provided by the New Zealand's National Environmental Standard (NZNES), and the WHO (i.e. 20 µg/m<sup>3</sup> –annual; 50 µg/m<sup>3</sup> –24 hours). It is strongly recommended that PM10 performance requirements are added.
46. ARPHS recommends that the more recent Health Canada Residential Indoor Air Quality Guidelines (2006) for Formaldehydes ([http://www.hc-sc.gc.ca/ewh-semt/alt\\_formats/hecs-sesc/pdf/pubs/air/formaldehyde\\_e.pdf](http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/air/formaldehyde_e.pdf)) are adopted for VOCs (Formaldehyde) as these account for time average (123 µg/m<sup>3</sup>-1 hour; 50 µg/m<sup>3</sup>-8 hours). Alternatively, the Auckland Regional Council's Ambient Air Quality Guideline (2005) levels should be adopted for Formaldehyde (100 µg/m<sup>3</sup> - 30 minutes) as this also account for time average.
47. ARPHS recommends that the Building Code adopts the Ministry for the Environment Ambient Air Quality Guidelines (2002) for lead as performance requirements (see <http://www.mfe.govt.nz/publications/air/ambient-air-quality-may02/html/table1-guideline-values.html>). The guidelines levels are for 0.2µg/m<sup>3</sup> (3-month moving average calculated monthly) and this more conservative value would provide greater public health protection.
48. ARPHS supports the idea that H<sub>2</sub>S should feature as an important factor for indoor air quality control once its health effect studies are completed and results become available. This may encourage the establishment of Indoor Air Quality Standards in New Zealand in the coming future.

**Question 37: What comments do you have about the performance requirements we are considering for thermal control?**

49. ARPHS supports the assumptions made for the performance requirements to be reasonable and targets achievable. The indoor air temperature performance requirements allow for some natural fluctuations and enable the building to achieve and maintain indoor air temperature targets for energy efficiency.

**Question 38: What comments do you have about the performance requirements we are considering for internal moisture control?**

50. ARPHS supports the proposed performance requirement. We especially support that the time required for condensation on surfaces in occupied spaces (e.g. bathrooms) to evaporate shall be limited to less than 3 hours.
51. ARPHS believes that to achieve the proposed requirement it is important to consider the relationship between condensation time and surface properties of different type of materials.

## Sanitation

### **Question 39: What comments do you have about the performance requirements we are considering for recycling facilities for solid waste disposal?**

52. ARPHS agrees that where no independent access or private open space is available, space shall be provided for safe, hygienic storage prior to collection of recyclable waste, and accessible for collection.

### **Question 40: What comments do you have above the performance requirements we are considering for water temperature for personal hygiene?**

53. For legionella control ARPHS recommends a minimum temperature of 60°C for a hot water cylinder and mandatory tempering valves to ensure tap temperatures cannot reach levels capable of causing burns/scalds.

### **Question 41: What comments do you have about the performance requirements we are considering for accessibility for laundering facilities?**

54. ARPHS supports all measures proposed to increase/improve access for users with disabilities.

### **Question 42: What comments do you have about the performance requirement we are considering for storage space for cleaning equipment?**

55. ARPHS supports the proposed requirement for commercial/industrial buildings to house specific cleaning spaces as set in Table 18. It is unfavourable to use the same sink for hand washing and the cleaning of mops/buckets. These spaces also require adequate ventilation that is appropriate for the storage of chemicals.

### **Question 43: What comments do you have about the performance requirements we are considering for capacity of water supply systems?**

56. ARPHS supports the notion that all building must have safe water supplies, and the proposed requirement that water systems be designed with adequate capacity in mind for their intended use (Table 18)
57. ARPHS does not support the proposed minimum volume of 250 litres per person per day. The Code should reflect the volume as set by the Ministry of Health (300 litres per person per day).

### **Question 44: What comments do you have about the performance requirements we are considering for drinking water?**

58. ARPHS supports the move to change from the use of potable to drinking in line with health legislation and international trends.
59. Correction of Acronym: DWSNZ 2005, not NZDWS 2005.

### **Question 45: What comments do you have about the performance requirements we are considering for raw water?**

60. ARPHS would be interested to see supporting evidence showing that virus/pathogens will not survive washing cycle if this water is to be used for laundry purposes.

**Question 46: What comments do you have about the performance requirements we are considering for continuous identification between drinking and non-drinking water systems?**

61. ARPHS supports changes that enable differentiation between pipes, valves and outlets as per Table 5 (Part 4) and Table 18.

**Question 47: What comments do you have about the performance requirements we are considering for water re-use?**

62. ARPHS supports the use of signage to indicate those pipes that provide non-drinking water. Reuse of water must be in accordance with TP58 regulations.

Features for wellbeing and physical independence

**Question 48: What comments do you have about adding multi-unit dwellings to the list of buildings that must provide an accessible route with features for people with disabilities?**

63. ARPHS supports performance criteria requiring access to, within and from buildings in multi unit dwellings.
64. ARPHS supports the inclusion of multi-unit dwellings to the list of buildings that must provide an accessible route with features for people with disabilities. This concept provides a sustainable vision consistent with an ageing population and intensification within the built environment.
65. All common spaces and shared facilities in buildings should also be accessible to people with disabilities. If people are unable to access the shared facilities then they will not be able to independently function there.
66. ARPHS supports an overall goal of universal design for all dwellings and supports strengthening proposed requirements to include components of universal design. It is acknowledged that there are currently some barriers to achieving this, for example cost and topography. However it is recommended that accessibility be required by all designers and if they are unable to meet certain requirements they provide an Access Statement (as in the UK) which describes how they have approached this issue and explains why they cannot meet certain requirements. This would then assume that all areas will be accessible unless it can be proved that it is too difficult or unreasonable.
67. Providing guidance to designers is a necessary step, though we are concerned that this will be inadequate in moving dwellings towards the overall goal of universal design. With an aging population and a growing emphasis of 'ageing in place', it is essential that the housing stock enables this to occur. Having homes that can accommodate the needs of mobility-impaired people is a critical precondition for ageing in place.
68. There is widespread concern within the disability sector at the incidence on non-complying buildings in public use areas right across the country. The

concern is about an apparent lack of awareness of accessibility requirements among building consent authorities (BCAs) and territorial authorities (TAs), and a corresponding lack of rigour in assessing compliance. These concerns are also reflected in findings from the Department's own Technical Reviews of BCAs' application of the Building Act requirements for access and facilities for people with disabilities. The most recent summary report in November 2006 identified "...a large number of examples of non-compliance within completed and approved buildings. It was clear from these examples that knowledge of accessibility requirements among many building consent authorities was inadequate and not being appropriately applied." The summary also reported a widespread lack of awareness of accessibility requirements and a lack of appreciation of people with disabilities' accessibility needs and the challenges they face when using public buildings. Feedback from disabled people concurs with that assessment and extends these failures to building designers and practitioners and building owners as well.

69. All buildings could be required to provide components of universal design principles with requirements growing over time. The expectation would be that all homes be built to Universal Design standards by a stated timeframe. Mainstreaming universal design principles provides a primary mechanism for future proofing our buildings and facilitates marketing housing for a wider appeal.
70. Recent research "Housing and Disability: Future Proofing New Zealand's Housing Stock for an Inclusive Society"<sup>1</sup> identified improving the accessibility of housing stock through the introduction of universal and accessible design as an immediate priority in New Zealand. The research found that 47% of disabled people interviewed needed additional features to enter or exit their homes safely and more than 50% were in need of internal house modifications despite 91% already having housing accessibility features and 83% having had customised house modifications. 20% (743,800) of the population in New Zealand 2001 reported a disability and the number is rising. This research illustrates the need for both accessible and universal design to be incorporated into the building code.

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<sup>1</sup> Saville- Smith, K., James, B., Fraser R., et al (March 2007) Housing and Disability: Future Proofing New Zealand's Housing Stock for an Inclusive Society. Final Report prepared for Centre for Housing Research Aotearoa New Zealand.

## Type 3 Changes

### Resource Efficiency

#### **Question 50: What comments do you have about using CO<sub>2</sub> emissions to measure the resource efficiency of buildings?**

71. ARPHS supports the use of ratings to measure the resource efficiency/energy efficiency of buildings. Current systems to calculate ecological footprints, such as CO<sub>2</sub> emissions analysis and energy-based lifecycle analysis, fail to give an appropriate value to ecosystem services (i.e. clean air and waterways) and public health gains that may result from these or other components of the building life cycle.
72. For example, the CO<sub>2</sub> emissions or energy used to produce a particular building material may be elevated due to high environmental standards used by the industry for its production. Such environmental standards, however, lead to a decreased output of contaminants into the environment in the long term and therefore benefit the planet and society, leading to less energy being spent in public healthcare (e.g. reduced number of visits to doctors, hospitalisations, and use and disposal of pharmaceuticals) and sustainable ecosystem services.
73. Using the currently proposed rating systems, the use of such materials could rate unfavourably compared to other materials produced with lower environmental standards. Another example could be the use of rainwater; a number of national and international studies have shown that the microbiological quality of roof-collected rainwater is usually poor, often failing to meet drinking water standards.
74. To minimise the risk of contamination of the roof-collected water, it is important to carry out regular maintenance of the rainwater collection and storage system. The quality of the roof-water has also been shown to improve dramatically with the use of “first flush diverters” (Abbott et al., Oct. 2006 –NZWWA annual conference). Regular disinfection of the water system or installation of disinfection systems that are properly maintained can ensure a safe water supply. Using the currently proposed rating systems, the addition of “first flush diverters” and disinfection systems could lead to an unfavourable rating although it will provide great benefits to public health.
75. The energy and pollution reduction given by reduced vehicle trips to the doctor, pharmacy and hospital as well as that saved by the public healthcare system in handling sick patients would not be considered. Therefore the use of any rating system that does not account for ecosystem services and public health can potentially lead to the promotion of practices or use of materials that overall are unsustainable.
76. One way to overcome this issue would be to add a public health risk assessment to either a CO<sub>2</sub> emissions analysis or an energy-based lifecycle analysis. The risk assessment could be consider, for example, the environmental standard used in the production/processing of materials (i.e. benefit to ecosystem services) and the health benefit in the use of such material (i.e. from insulation, the level of treatment of the rainwater etc.)

77. The score from this assessment can then be used to adjust the energy/CO<sub>2</sub> emissions rating so that products produced with higher environmental standards are favoured as well as systems that favour the health of inhabitants or users of the building in the longer term.
78. Such a system would lead to the following benefits:
- Promotion of higher environmental standards from the industry
  - Promotion of the efficient use of resources
  - Improved public health and hence reduce the burden on the public healthcare system
  - Sustainable ecosystem services for the whole population
79. The above are gains in addition to those that any efficiency rating would bring:
- Conservation and efficiency of non-renewable energy for heating water, space and for lighting
  - Promoting the use of renewable energy and energy-efficient design
  - Conservation and efficient use of materials
  - Minimising waste and promoting recycling
  - Encouraging the use of sustainable materials
  - Consideration of whole-of-chain environmental impacts
80. In conclusion, a CO<sub>2</sub> emissions rating can consider the lifecycle of the building whereas the energy rating may not. Even if the energy rating could be adjusted to include the whole lifecycle, both systems could lead to unwanted impacts as they would not give favourable values to ecosystem services and public health.
81. Considering that CO<sub>2</sub> emissions rating is a new measure for building codes internationally, it could be possible to go a step further and add a risk-based system to fulfil the gaps in efficiency rating system and work toward promoting a wider sustainability concept. Certainly further work is required on the detail of how this might be calculated, and how it might work in practice.

**Question 51: What comments do you have about limiting the maximum heating or cooling for maintaining the indoor temperature within the comfort range?**

82. ARPHS supports internal temperature in residential and commercial buildings of no less than 18° C and no more than 24° C at reasonable cost and without resorting to significant heating or cooling energy. Increasing insulation requirements in the Building Code will greatly assist in achieving this target.
83. This is likely to promote better building design (e.g. taking advantage of passive solar heating), use of quality insulation materials (which helps to maintain a comfortable indoor temperature with reduced energy use), and overall reduce energy (power) usage as well as reduction of wastage (e.g. by using a power hungry heating system above what is necessary).
84. It is unclear how this system would work in practice in association with the CO<sub>2</sub> emissions assessment model for efficiency. When considering that the CO<sub>2</sub> emissions would be assessed on that temperature range regardless of whether the building users actually operated the building to those conditions, it is unclear whether the assessment will be based on the power usage to achieve the temperature range (e.g. by conversion to carbon estimate) or the lifecycle of the material used (e.g. insulation, components of the

heating/cooling system). There is a risk that a 'power hungry' heating system may be rated as good if not better than a well-designed and insulated building.

**Question 52: What other comments do you have about resource efficiency?**

85. Resource efficiency is a very important but complex issue. Efforts to improve resource efficiency can benefit the environment and public health through reduced resource and energy use, and cleaner air.
86. The Building Code can play an important role in achieving these goals but care has to be taken in the approach. An approach that is too simplistic may leave out some important aspects of sustainability that could lead to detrimental outcomes at the wider community and population scale.
87. ARPHS supports the use of ratings to measure the resource efficiency or energy efficiency of buildings but any system adopted needs to give value to ecosystem services and public health. It is suggested that the current discussion and proposal for a rating of efficiency go a step further by including a public health- and ecosystem services-based risk assessment. This will certainly improve the CO<sub>2</sub> emissions rating system as well as other currently available systems to measure resource efficiency and/or sustainability.
88. ARPHS is supportive of waste minimisation and reduce use of resources, as well as some forms of recycling. ARPHS considers that a robust, scientifically based risk assessment system must be in place to ensure recycled materials do not negatively impact on the public health or breach existing laws (e.g. recycling old roof or wall cladding materials that contain asbestos, recycling weather boards with unstable lead-based paint). ARPHS does not support the use of raw (untreated) wastewater, and generally also the use of grey-water (except in limited situations with strict conditions).
89. There is a high public health risk associated to these forms of recycling. For example, poor irrigation practices with untreated or partially treated wastewater may impact the quality and safety of groundwater in shallow aquifers and surface waters that supplies drinking water. In addition, exposure to human waste materials can lead to serious adverse health effects and disease outbreaks due to the high microbial pathogen loads.
90. To further the discussion, it would be important to also look at the issue of affordability. It is unclear how resource efficiency models (based on CO<sub>2</sub> emissions rating or energy rating) can also address this issue. The affordability of a building depends on a number of factors that reflect costs against a basket of other factors such as income, tax and other demands on the purchaser's budget.
91. There is likely to be little argument with the proposition that the direct costs of a building comprises elements derived from the initial cost of construction and elements derived from the cost of maintenance throughout the building's life.
92. ARPHS also argues that the indirect costs of illness resulting from poor building design and construction are part of the costs of a building. These costs are currently externalised to the health sector as the cost of treatment,

to families as the cost of caring and to the wider economy as the cost of worker ill health and lost production.

93. Resource efficiency perhaps should also look at the maintenance of the building and building components as these would impact on the durability of materials and the building, as well as on the public health risk (appropriately managed systems performs better), and resulting cost. The direct and indirect costs of buildings can be considered when decisions are made about the contents of, and performance standards, for the building code.

#### Features for wellbeing and physical independence

#### **Question 56: What comments do you have about the requirements under consideration for a 'design furniture' standard?**

94. It is essential that the building code require adequate space in dwellings, particularly apartments. As noted in previous submissions, ARPMS has had considerable concern about the small 'shoe box' apartments that have been built in the Auckland CBD. ARPMS is not convinced that the 'design furniture' standard under consideration will provide adequate space and wellbeing for occupants, particularly in multi-unit dwellings, and may be a complex way of ensuring adequate space. ARPMS suggests more consideration is given to the following:
- Requiring a minimum total floor area for different apartment types (e.g. 1, 2, and 3+ bedrooms),
  - Minimum area for balconies
  - Requiring minimum space requirements for residential living activities:
    - Internal entry areas for shoes, coats etc.
    - Living areas providing space for reading, conversing, cooking and dining and normal sized furniture
    - Kitchen areas—food storage, preparation, cooking, serving, washing up and allowing for circulation between fixtures and furniture
    - Eating areas—eating, working, studying while seated at a table and allowing circulation between furniture and fixtures
    - Bedrooms—e.g. double bedrooms able to accommodate queen size beds and wardrobes and enough circulation between fixtures and furniture
    - Study/office—adequate space for desk and chair and working on a computer safely
    - Bathroom—adequate space to carry out personal hygiene e.g. showers, toilets, hand basins, towel rails and storage of personal hygiene products
    - Laundry—space for washing and drying clothes hygienically (not in the kitchen)
  - Requiring minimum floor to ceiling heights of 2.4 metres.
  - Requiring minimum storage for personal items and cleaning equipment to be stored hygienically, safely and conveniently. Secure storage is also required for bikes, sports equipment, garden equipment, baby strollers etc.
95. ARPMS suggests the code require certain widths of doorways and corridors to allow easy access for those in wheelchairs so that modification is not required. ARPMS would also like to ensure adequate storage is provided.

**Question 57: What comments do you have about the requirements being considered for connection to the outdoors?**

96. Natural light is very important and needs to be provided in all living areas and bedrooms of residential dwellings. Adequate access to natural light is both a health and wellbeing issue.
97. New Zealanders have considerably low levels of vitamin D (produced from exposure to sunlight) compared to other countries internationally. The health consequences of vitamin D deficiency are considerable. Buildings should be designed for optimum sunlight exposure.
98. The Housing Improvement Regulations 1947 state that every habitable room shall be provided with one or more windows to ensure that adequate light is admitted. ARPHS recommends that this be stipulated in the new code.

**Other comments**

99. ARPHS recommends that mechanisms are put in place to monitor the implementation of the building codes to ensure performance requirements and overall outcomes of safety, health and wellbeing are met.
100. Affordable housing is an important issue and ARPHS would encourage the Code to be mindful of that fact, whilst at the same time not sacrificing quality, which could lead to increased inequalities.
101. ARPHS generally supports the proposed structuring of the Code to reflect the practical needs of Code users. However, the current document was slightly difficult to work with. Firstly, it was hard to relate it back to the previous discussion document; and secondly, each section (e.g. fire safety) was split by the type 1, 2, 3 changes throughout the document; it would have been easier to have them all together in each section.
102. There is currently a regulatory review of the Early Childhood Centres Regulations being conducted by the Ministry of Education, so it will be important for any Building Code changes to align with this. Current issues of concern regarding early childhood centres include inadequate natural or artificial lighting, inadequate ventilation, problems in ensuring that noise is kept at a reasonable level, and inadequate heating.

Yours Sincerely,



Monica Briggs  
**Service Manager,**  
**Auckland Regional Public Health Service**