Study Report

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Maintenance and common repair issues in medium-density housing

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Abstract

Medium-density housing (MDH) can present particular maintenance challenges for its owners. The maintenance requirements of this type of housing may be more complex than for stand-alone housing. Collaborative decision making is required by a body corporate, and the knowledge of and attitudes towards maintenance and common repair issues amongst the owners making up the body corporate can vary widely. This report discusses the maintenance requirements of MDH and the common repair issues that many face. It also describes the core legal concepts that apply to MDH as provided for in the Unit Titles Act 2010. The report provides a snapshot of common issues that may arise when maintaining MDH. Our research indicates that these are due mostly to gaps in the knowledge of the owners about their rights and responsibilities. Finally, we provide some suggestions as to how those gaps might be closed.

Keywords

Medium-density housing, MDH maintenance, body corporate, bodies corporate, long-term maintenance plans, disclosure regime

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Executive summary

New Zealand is building more and more medium-density housing (MDH). This is because of a need to house an increasing number of New Zealanders, many of whom want to live in large urban areas where land and space are limited. MDH also has the potential to offer more affordable housing and could be an important part of meeting housing demand now and in the future.

Maintaining the exterior and interior of any house is important. Any constructed building will start to wear almost immediately after it is built. Wear can result from exposure to the elements and from general use. When buildings degrade, they may not function as designed. This may mean performance and durability is less than optimal.

If necessary maintenance is not attended to, both building performance and occupants' health may suffer.

BRANZ plays an important role in educating and informing designers, specifiers and builders to build with maintenance in mind. BRANZ also produces a significant body of information on maintenance requirements for homes. However, this is focused on stand-alone homes.

MDH maintenance needs can be more complex than for stand-alone homes. This can result from the way they are built, which includes special features related to fire protection and noise reduction as well as shared walls, floors and common spaces. As MDH is often multi-storey, there are specific maintenance challenges related to height and access.

MDH maintenance is further complicated where there is joint ownership of MDH, which is regulated under the Unit Titles Act. This is a model that is not well understood by some owners and may not function well to meet their needs. In addition, there is literature to support the view that MDH may not be as well built as other housing typologies.

The maintenance challenges may mean MDH is not as well maintained as it should be. Costs of not maintaining our housing stock impacts on us all. Our research estimates costs of deferred maintained may be 500% of original repair costs over 20 years.

An analysis of the challenges with maintenance of MDH has identified a number of ways in which the situation could be improved and more timely and effective maintenance could be enabled.

Culture change

This includes ensuring:

- MDH owners have a better understanding of their roles and responsibilities
- bodies corporate function better to meet the needs of all owners
- good communication is in place
- expert advice is sought where needed
- obligations for maintenance planning are met
- a transparent process for contractor selection to deliver maintenance is in place.

Regulatory setting changes

These include:

- regulation of body corporate levies to ensure they are consistent throughout the life of the building
- requiring schedules for major and capital works and preparation of independent building life-cycle costing on completion of development, which are delivered to the body corporate.

Consideration might also be given to a building bond system which will cover defective work once a building is handed over by the developer.

Better guidance

This includes improving the knowledge of all parties involved in MDH. Primary areas for focus need to be:

- body corporate manager skills
- guidance on body corporate membership rights and responsibilities
- guidance on MDH maintenance requirements.

Improved planning horizons

This means planning for longer-term building maintenance at design and build stages. Consideration of full building life-cycle costs needs to be part of the long-term maintenance plan.

Addressing deferred maintenance now

Moving from response-based maintenance to planned maintenance needs to happen. This will be costly. Government may need to consider support.

1. Introduction

The BRANZ MDH research programme aims to “provide industry with the tools to deliver MDH that meets the needs of New Zealanders” (Litten, 2016). Specifically, this research was designed to inform an understanding of the challenges in relation to ensuring adequate maintenance of MDH can occur. We also offer options to address those challenges.

The research is based on:

- a review of the literature
- interviews with body corporate chairs
- case studies
- engagement with the Ministry of Business, Innovation and Employment (MBIE) as it reviews the Unit Titles Act.

1.1 Defining MDH

There is growing discussion around MDH as it becomes increasingly common in New Zealand, but what precisely is it? For the purpose of the research reported here, BRANZ has defined MDH as multi-unit dwellings up to 6 storeys.

Although the term MDH is widely used, there is no consistency in the use of the term. Various definitions focus on site size, building height, the number of units per site or number of dwellings/people per hectare as defining features. Some definitions include house typology.

This report uses the definition of MDH developed by BRANZ in the first report of the MDH programme series (Bryson & Allen, 2017). The BRANZ definition encompasses all the typologies of building that are commonly thought of as MDH. The definition includes (but is not limited to):

- apartment blocks up to 6 storeys (medium-rise apartments)
- townhouses, flats and terraced housing
- commercial conversions
- residential homes that have been divided (also referred to as internal subdivision).

1.2 Context

The potential social, economic and environmental benefits that MDH can provide are well recognised and established.

Some of these benefits evident from our literature and case study research include:

- more efficient use of a finite supply of land
- retaining the ability to use rural land for productive purposes
- greater cost effectiveness in the provision of infrastructure and services
- lowered costs from reduced time spent travelling
- more concentrated demand for public transport, making it more cost-effective and ultimately providing a better quality of service
- the possibility for more social connectedness and vitality.

There is increasing pressure in some parts of New Zealand to promote more sustainable forms of urban development because of continued urban growth. MDH is

an attractive solution for planners at both national and local levels because it enables more dwellings to be built on less land.

Housing affordability has become a bigger issue in recent years, and many planners see the increase in MDH as a positive development to address this. MDH is a mechanism to increase supply of housing and can be more affordable due to economies of scale that can be achieved from sharing common areas.

The New Zealand experience of MDH is relatively new when compared to that of much of Europe, the United States of America and some Australian cities. However, over the last two decades, residential intensification has increased in New Zealand. This has been due to the increasing pressure on available land in some urban areas, along with residents' need to live closer to where they work. Most MDH is in cities, as higher-density residential areas are being created closer to the central business districts (MBIE, 2016b).

The growing trend of building and owning MDH units is evident in Auckland as well as other cities such as Wellington, Hamilton and Christchurch. The Queenstown Lakes District is another area where development is struggling to keep pace with demand.

The 2013 Census of Population and Dwellings recorded 266,751 dwellings that were joined to other dwellings (for example, units, apartments or terraced houses), making up 18.1% of occupied dwellings. Joined dwellings were most common in Auckland, Wellington and the Queenstown Lakes District, where nearly a quarter of private dwellings in each region are joined. Wellington City had the highest proportion of joined dwellings at 37%, an increase from 32.7% in 2001.

Most joined dwellings were in a 1-storey building (149,583), with 91,968 in a 2 or 3-storey building. A total of 23,145 were in complexes of 4 or more storeys, while 2,055 had no storey information (Table 1).

Table 1. Number of dwellings that are joined to other dwellings.

Dwelling type	Number of dwellings	Proportion of joined dwellings (%)
1-storey	149,583	56.1
2 or 3-three-storey	91,968	34.5
4-storey or more	23,145	8.7
Joined but no storey information	2,055	0.8
Total	**266,751**	**100.0**

Source: Census of Population and Dwellings 2013.

More MDH is being built. Building consents in New Zealand have risen considerably since reaching a low in 2011. Statistics New Zealand (2017) published MDH building consents for 2016, comparing them with those from a year earlier:

- 4,401 townhouses, flats, and units (up 20%)
- 2,307 apartments (down 9.1%)
- 1,952 retirement village units (up 2.8%).

In 2017, more than 14,000 bodies corporate represent the owners of at least 60,000 units, many of which will be in MDH.

Table 2 shows the number of bodies corporate in New Zealand by the number of units included in each body corporate.

Table 2. Number of bodies corporate by number of units.

Number of bodies corporate	Number of units	Proportion of total bodies corporate (%)
11,162	1–9 units	79.3
2,045	10–29 units	14.5
873	30+ units	6.2

Source: Land Information New Zealand.

Maintenance can be defined as regular or routine work to achieve the expected durability and performance of building elements or components of buildings. It may involve the replacement of components subject to wear or damage. It includes:

- minor work (such as repainting walls)
- major capital works (such as replacing a roof, repainting the exterior)
- emergency major repairs (such as earthquake strengthening)
- repairs of building defects (such as responding to weathertightness issues or dealing with faulty passive fire protection).

Maintenance of MDH can be more complex than for stand-alone housing. This complexity can come from:

- the building size and height
- the increased level of servicing (fire protection, lifts and so on) that may be present in a multi-unit development
- the need to negotiate between a large number of owners.

Owners of stand-alone dwellings have individual control over when and to what extent maintenance is carried out. They are autonomous in their decision making and individually take on the cost and risk of comprehensive maintenance as compared to no or limited maintenance.

In contrast, in MDH where there is more than one owner, coordination and joint decision making is required. Each owner has limited ability to influence decisions on when and to what extent maintenance is carried out. They are members of their body corporate but may not be on the committee. However, all owners individually bear the cost of maintenance as well as the risk of limited or no maintenance.

1.3 Relevant research

This research is contextualised in a body (albeit small) of literature on MDH maintenance in New Zealand and internationally (Lujanen, 2010; Puustinen & Lysnar, 2014; Puustinen & Viitanen, 2015).

There is now a very significant literature on the compact city, which is also contextually important (Randolph, 2006; Troy et al., 2015; Vallance, Perkins & Dixon, 2009).

The contribution of this work (and other work as referenced) is acknowledged.

1.4 Research questions

These research questions are addressed in this research:

- Are there different requirements for maintaining MDH (compared to stand-alone houses), and are there any repair issues common to MDH?

- If so, do homeowners and occupiers understand what they are?
- Are there any barriers to properly maintaining and repairing MDH?
- If so, are they impacting on the state of maintenance and repair of MDH?
- What can be done to address those issues to encourage and enable MDH to be properly maintained?

1.5 Research methodology

The research method included:

- a review of the literature relating to MDH and maintenance in New Zealand
- a heavy reliance on the BRANZ publication *Designing for Maintenance* (Pringle, 2015)
- engagement with MBIE on proposal for change to the Unit Titles Act
- interviews with body corporate chairs
- two case studies.

This report is a preliminary work and is not intended to be an in-depth analysis of every consent problem or proposed solution as it applies to MDH. It is intended to offer some helpful advice on some common issues. Research findings are based on interviews with stakeholders across New Zealand in central and local government as well as industry.

The conclusions reached are based on the information, perceptions and views this work has provided.

2. Maintenance

In this section, we look at what maintenance is. We also ask why we should do it, how well we are currently doing it and how we can do it better.

The first and most important thing to note about MDH maintenance is that responsibility is divided between two parties. The responsibility for maintenance is with:

- the body corporate where it is external and for servicing (for example, fire prevention systems, lifts, centralised air conditioning)
- the unit owner for finishes and fitments within a dwelling unit.

2.1 What is maintenance?

Pringle (2015, pp. 5–6) identifies several definitions of maintenance:

- The required processes and services undertaken to care for a building's structure and/or services from after completion or after any repair, refurbishment or replacement to current standards to enable it to serve its intended functions throughout its entire lifespan without upsetting its basic features and function.
- The day-to-day activities required to preserve, retain or restore equipment and systems to their original condition or to a condition that the equipment can effectively be used for its intended purpose
- Activities required or undertaken to conserve as nearly and as long as possible the original condition of an asset or resource while compensating for normal wear and tear
- A periodic cost incurred in activities that preserve an asset's operational status without extending its life. Maintenance is an expense that, unlike capital improvement (which extends an asset's life), is not capitalised.
- Actions necessary for retaining or restoring a piece of equipment, machine or system to the specified operational condition to achieve its maximum useful life. It includes corrective maintenance and preventive maintenance.
- Work undertaken in order to keep, restore and improve every facility – that is, every part of a building, its services and surrounds – to a currently acceptable standard and to sustain the utility and value of the building.

In a regulatory sense, it is a New Zealand Building Code requirement to ensure the performance and functional requirements continue to be met throughout the life of the building

All these definitions have a common theme of ensuring, through services, that buildings continue to function as they were designed.

For the purposes of this research, the general theme of keeping function intact has been used.

2.2 Why maintain?

A building must be designed to comply with the (minimum) requirements of the Building Code. Upon completion of construction in accordance with the consented documents, the building will be issued with a Code Compliance Certificate to confirm

this. The Building Code also requires that normal maintenance be carried out to ensure the performance and functional requirements continue to be met throughout the life of the building.

From that point onwards, the building will start to age. All parts of every building will be affected by this ageing process. There are a number of factors that work to degrade or wear out building components. These include exposure to elements (rain, wind, low or high temperatures) as well as how it is used by occupants.

Whilst a building can be reasonably expected to perform as per its design and specification for some time, ageing will mean that maintenance will be required, sooner or later. Some parts of the building will require maintenance very early in its life , whilst some parts will function well for many years. Some parts will require little maintenance throughout the life of the building, while some parts will need maintenance within the first year of the building's life.

Maintenance requirements will depend on how the building is being used as well as where it is and the quality of the components used in its construction. More specifically, the factors contributing to ageing (wearing out or degrading of components) are Pringle (2015, p. 7):

- the building owner's approach to maintenance
- design and construction complexity
- warranty conditions for installed products and systems
- construction materials used
- finishes specified
- construction and detailing quality
- environmental conditions
- statutory or essential service requirements
- activities carried out within and around the building
- behaviour of the building occupants
- the ease with which maintenance can be carried out
- the way the building is treated by the occupants
- the commissioning processes carried out.

2.2.1 Legal requirements for maintenance

The Building Code specifies that building owners must ensure the on-going health and safety of a building's occupants.

The Building Act 2004 sets out the obligation for developers to meet the requirements of the Building Code and the responsibility of building consent authorities (BCAs) to ensure compliance with the Building Code. The Building Code clause B2 *Durability* sets out the maintenance requirements for building elements when the building is constructed. Building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code for a specified period of time (see Figure 1).[1]

[1] For a full list, see Building Code B2 *Durability* Table 1 Durability requirements of nominated building elements (pp. 17–22) – https://www.building.govt.nz/assets/Uploads/building-code-compliance/b-stability/b2-durability/asvm/b2-durability-2nd-edition-amendment-9.pdf

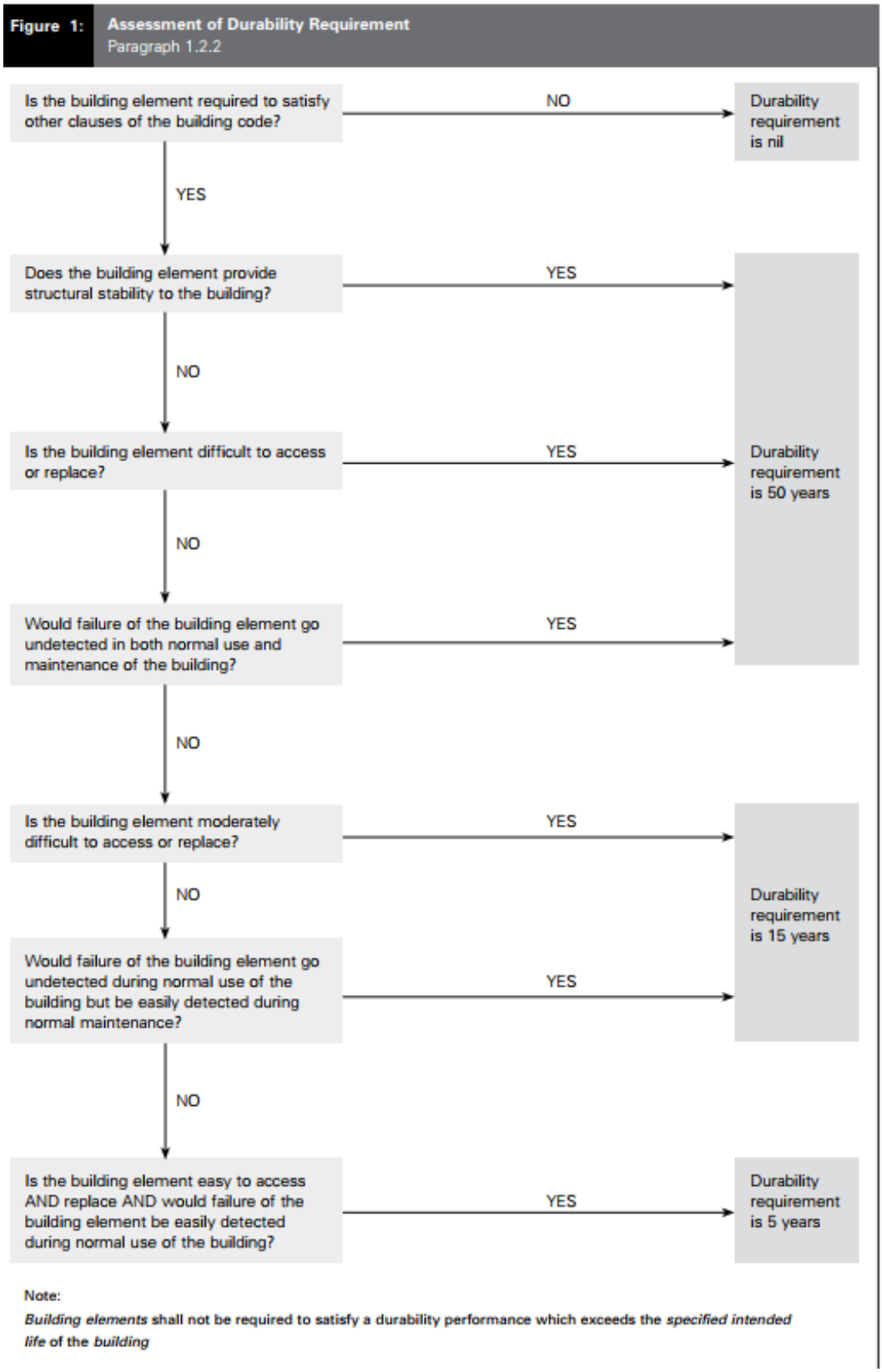

Figure 1. Building Code assessment of durability requirements.

Source: Building Code B2 *Durability* (p. 16) © Ministry of Business, Innovation and Employment. Licensed for re-use under a Creative Commons Attribution 4.0 International Licence.

The time depends on the use of those building elements and the degree to which they can be accessed and their maintenance requirements detected. Many building elements are required to have a minimum durability with normal maintenance. It is up to the building owner to ensure that these elements are inspected and maintained within that timeframe.

This can be summarised as follows:

- **Not less than 50 years:** Building elements (including floors, walls and fixings) that provide structural stability to the building or are difficult to access or replace or where failure of those building elements to comply with the Building Code would go undetected during both normal use and maintenance of the building.
- **Not less than 15 years:** Building elements (including the building envelope, exposed plumbing in the subfloor space and in-built chimneys and flues) that are moderately difficult to access or replace or where failure of those building elements to comply with the Building Code would go undetected during normal use of the building but would be easily detected during normal maintenance.
- **Not less than 5 years:** Building elements (including services, linings, renewable protective coatings and fixtures) that are easy to access and replace and where failure of those building elements to comply with the Building Code would be easily detected during normal use of the building.

Most MDH will require a compliance schedule to be met and will need to have an annual building warrant of fitness issued. MDH is included if it contains any of the following:

1. Automatic systems for fire suppression (for example, sprinkler systems).
2. Automatic or manual emergency warning systems for fire or other dangers (other than a warning system for fire that is entirely within a household unit and serves only that unit).
3. Electromagnetic or automatic doors or windows (for example, ones that close on fire alarm activation).
4. Emergency lighting systems.
5. Escape route pressurisation systems.
6. Riser mains for use by fire services.
7. Automatic backflow preventers connected to a potable water supply.
8. Lifts, escalators, travelators, or other systems for moving people or goods within buildings.
9. Mechanical ventilation or air conditioning systems.
10. Building maintenance units providing access to exterior and interior walls of buildings.
11. Laboratory fume cupboards.
12. Audio loops or other assistive listening systems.
13. Smoke control systems.
14. Emergency power systems for, or signs relating to, a system or feature specified in any of clauses 1-13.
15. Any or all of the following systems and features, so long as they form part of a building's means of escape from fire, and so long as those means also contain any or all of the systems or features specified in clauses 1 to 6, 9, and 13:
    a. Systems for communicating spoken information intended to facilitate evacuation; and
    b. Final exits (as defined by clause A2 of the building code); and

c. Fire separations (as so defined); and
d. Signs for communicating information intended to facilitate evacuation; and
e. Smoke separations (as so defined).

- All buildings with a cable car, including single residential buildings, require a compliance schedule.[2]

MBIE provides a compliance handbook[3] to assist those required to meet these Building Code conditions.

Some further requirements need to be met in relation to building maintenance if this is specified in an Acceptable Solution. Those requirements will vary, and depend on how the building was designed and consented. For example, if Acceptable Solution E2/AS1 is used, clause 2.5 Maintenance – General specifies the maintenance required to be carried out "as necessary to achieve the required durability of materials, components and junctions". Clause 2.5.1 Regular maintenance specifies the maintenance required, and this includes washing exterior surfaces, inspecting surfaces and junctions (repairing and replacing items when necessary), maintaining required clearances and maintaining finish coatings.

2.2.2 Issues with not doing maintenance

If a building is not maintained, it will not perform or be as durable as expected. The impacts of poorly maintained buildings can be serious, impacting on the health and safety of occupants. In terms of performance, lack of maintenance may mean less-efficient operation of building systems and/or acceleration of deterioration where issues have not been addressed. For example, an air-conditioning system that is effectively serviced and maintained uses approximately 10% less energy than one that is poorly maintained (Pringle, 2015, p. 6).

A poorly maintained building will also lose value in the marketplace as deterioration spreads and accelerates, leading to greater overall maintenance costs than a well maintained building (see section 2.6).

2.3 How to maintain

BRANZ provides a significant volume of advice for homeowners on how to maintain their homes through our guides, publications in *Build* magazine, fact sheets and study reports.

BRANZ hosts a website specifically about maintenance of homes for New Zealanders at www.maintainingmyhome.org.nz (see Figure 2). The website advises homeowners to regularly check their homes for signs of defects or wear. They are also provided with a checklist[4] and advice on which building elements will need maintenance every year.

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[2] Source: www.building.govt.nz/managing-buildings/managing-your-bwof/specified-systems-and-compliance-schedules/ © Ministry of Business, Innovation and Employment. Licensed for re-use under a Creative Commons Attribution 4.0 International Licence

[3] It can be accessed at www.building.govt.nz/assets/Uploads/building-code-compliance/handbooks/compliance-schedule-handbook/Compliance-schedule-handbook-amendment-3.pdf

[4] See http://www.maintainingmyhome.org.nz/assets/Charter/MYH-table-Maintenance-schedule2.pdf

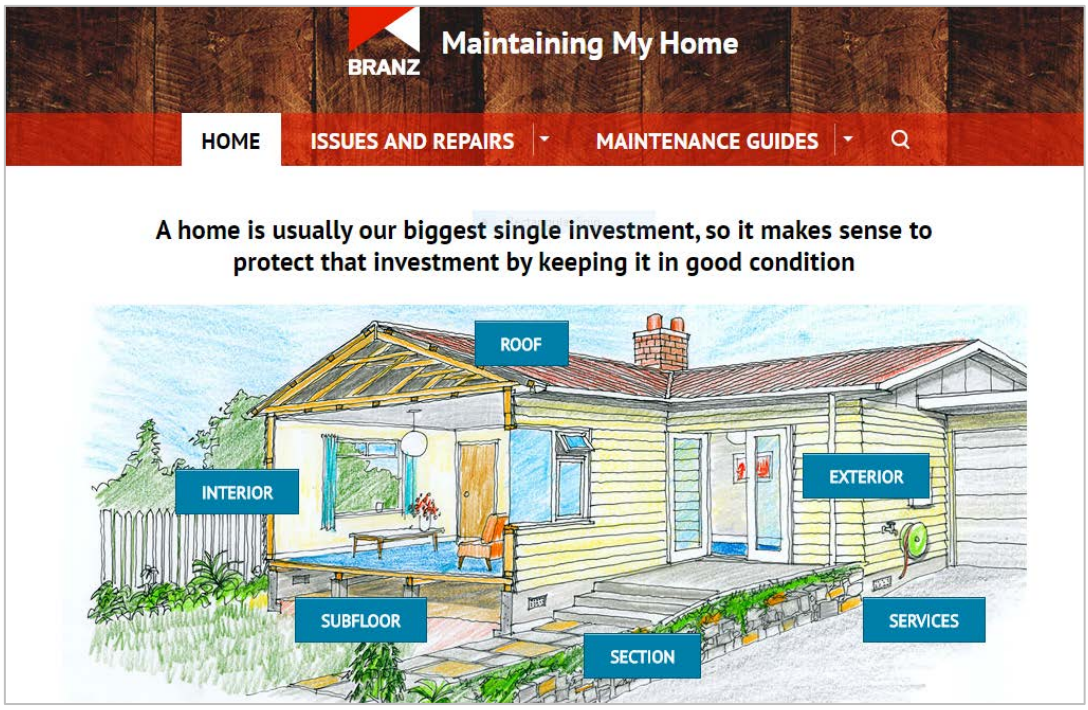

Figure 2. BRANZ Maintaining My Home website.

Areas requiring maintenance and covered in the website include:

- roofs and spouting
- walls – including doors and windows
- decks and balconies – particularly roof decks and deck/wall or balcony/wall connections
- foundations and subfloor spaces
- services – including plumbing and drainage, electrical, hot water services, heating systems, septic tank and aerated water treatment systems
- interior – in particular within roof spaces and attics and around wet areas such as kitchens, bathrooms and laundries
- outdoor areas.

The Maintaining My Home website provides advice on common issues and what to do about them (see Figure 3).

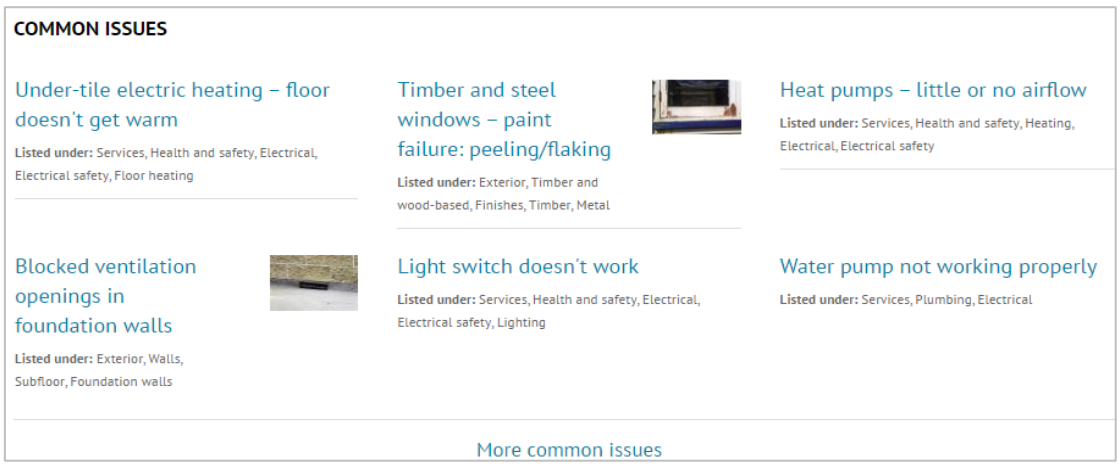

Figure 3. Selection of common maintenance issues.

None of the BRANZ guides, either for designers or homeowners, specifically focus only on MDH and the requirements for maintenance of these types of dwellings. However, much of the advice can be applied to MDH.

For new residential buildings, it is a legal requirement that key maintenance information is supplied to owners of newly constructed dwelling. The BRANZ Maintenance Schedules web-based tool (www.maintenanceschedules.co.nz) is one option for providing such information to homeowners. A sample maintenance schedule report is available from the website home page.

2.4 How well are New Zealand homes maintained?

BRANZ's recent House Condition Survey was carried out in 2015/16. This survey involved independent assessment of 560 stand-alone houses throughout New Zealand. Each property was assessed for condition and defects, both inside and out. The survey included stand-alone and terraced housing.

Overall findings were that the condition of our housing stock of stand-alone houses is reasonably poor, with 20% of all houses poorly maintained, 40% reasonably maintained and 39% well maintained (White, 2017). Deferred maintenance contributed to the overall low performance (see Figure 4).

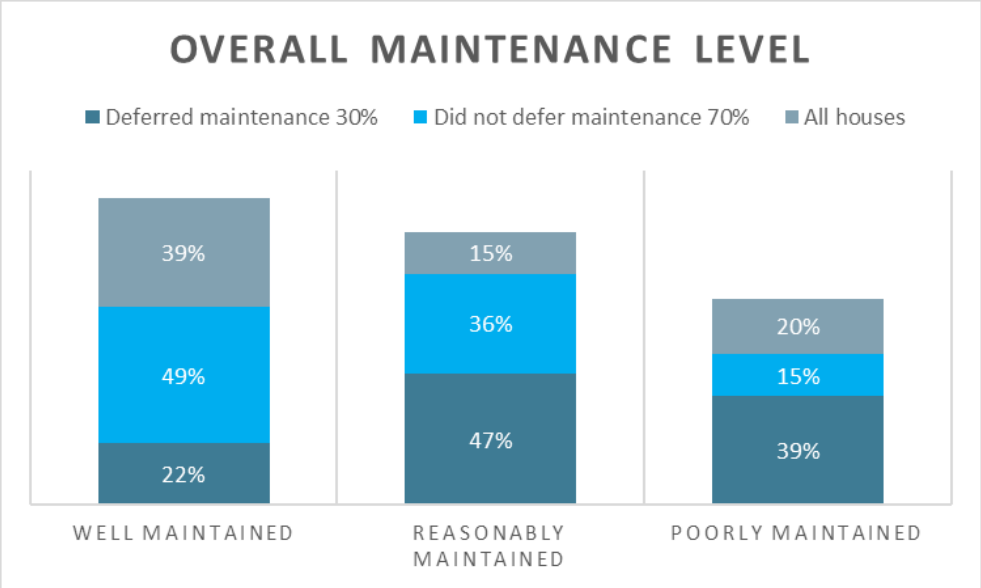

Figure 4. Assessor rating of overall level of maintenance for owner-occupied houses that had not deferred maintenance in the last 12 months.

The primary reason cited by occupants for deferring maintenance was cost. This was followed by deeming the maintenance not to be serious. At least one building feature in serious condition was found in 7% of houses, and 39% had one or more features in poor condition. Roofs and wall cladding were the most common features to be in poor or serious condition.

Overall, survey findings were that 70% of all stand-alone and terraced houses have not had any maintenance done in the past 12 months (see Figure 5). It is important to note that maintenance in this period may not have been required.

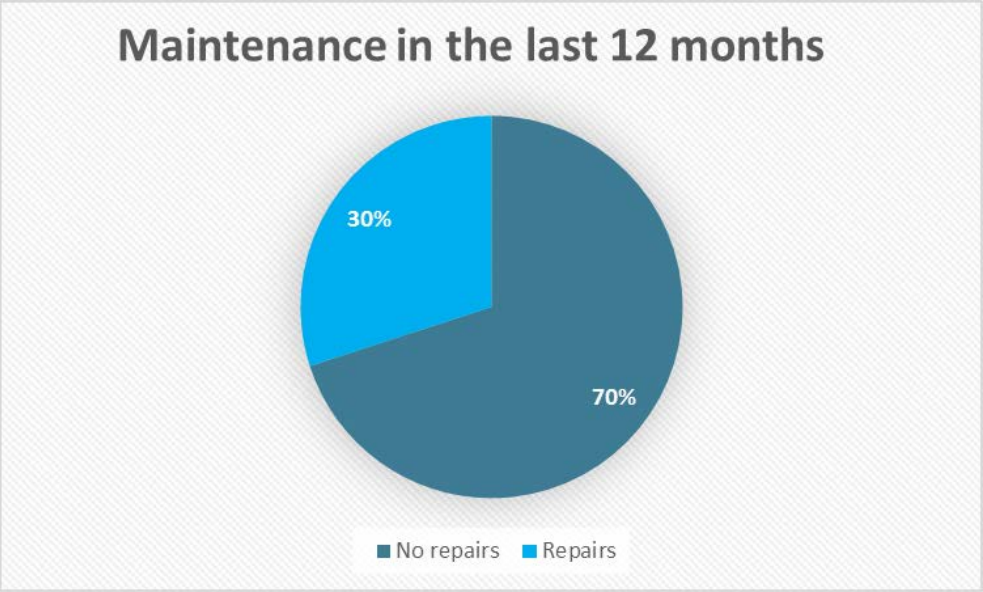

Figure 5. Houses subject to maintenance in past 12 months.

For houses that have been maintained recently, Figure 6 shows that nearly half have had work done to both interior and exterior features.

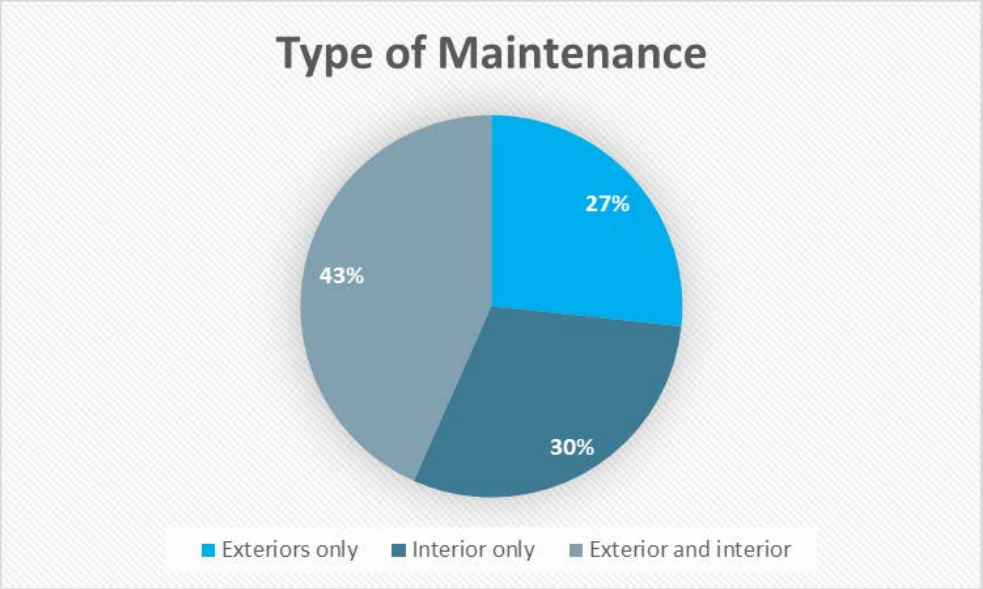

Figure 6. Building areas subject to maintenance in the past 12 months.

Within the 30% of dwellings that were maintained, the most common building elements to be maintained were windows and bathroom fittings (see Figure 7).

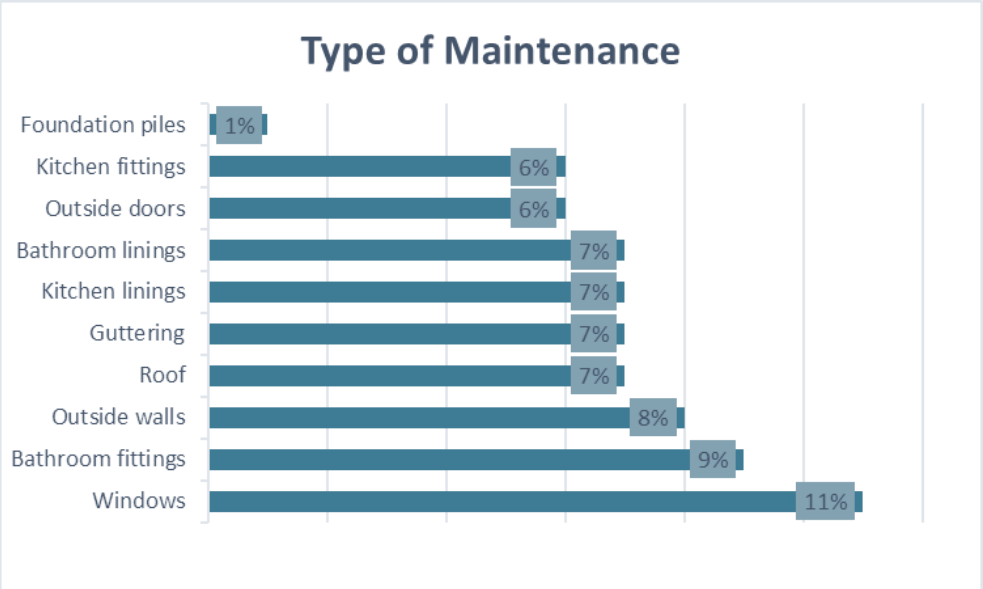

Figure 7. Building elements subject to maintenance in the last 12 months.

Nearly half of owner-occupied houses were considered well maintained. However, a lack of maintenance was more evident in rental housing, with one-third assessed as poorly maintained compared to 14% of owner-occupied housing.

Most house maintenance is identified reactively by occupants rather than engaging professionals to proactively identify maintenance issues. Of houses that had maintenance work done in the past year, 91% of occupants identified the need themselves, followed by tradespeople (7%) and building inspections (5%).

Tradespeople are more commonly involved in repairs after the need has been identified. Paid tradespeople undertook maintenance work for 65% of houses that were maintained in the past year, and occupants completed work on 28% of houses. Despite an overall lack of proactivity towards maintenance, a decision has been made to defer maintenance in 30% of houses.

2.5 Maintenance costs

New buildings need minimal maintenance for several years after construction. However, eventually wear and tear to surfaces and components requires attention. The required maintenance is estimated at 0.3% of the building value, which should be set aside each year (Sjostrom, 1996, p. 827). For example, if the first major maintenance occurs 10 years after construction, the approximate cost will be 3% of the building value (excluding land value). For a typical unit of 130 m^2, the current value is about $600,000 and the maintenance cost is $18,000. Most of this will be the roof and wall cladding coatings, repainting some internal surfaces and new fittings in the bathroom or kitchen.

The 2015 House Condition Survey found that the value of required maintenance was, on average, $12,000 for rental housing, many of which were multi-units. If the stock was being regularly maintained to near-new condition, the average cost of required maintenance could be expected to be $1,800. Therefore, it is apparent there is a build-up in deferred maintenance.

2.6 Costs of not maintaining

What happens if this maintenance is not addressed? Dwellings begin to deteriorate at an accelerating rate. A defect in any component can spread within that component if not fixed, and if it is serious enough, the defect can adversely affect other components. For example, a leaking roof will cause defects in the ceiling lining and eventually the floor.

The House Condition Survey recorded the condition of 26 components on a 5-point scale from 1 = serious (needs immediate attention) to 5 = excellent (as new). For each condition state and component, there was a unit cost (usually a $/m^2 of floor area rate) to bring that component back to near-new condition. This enabled the calculation of the total repair cost per house in the survey.

To calculate the effect of deferred maintenance, estimates were made on how long it would take for each condition state to deteriorate to the next worst state. The opinion of BRANZ experts was :

- condition 5 to 4 – 10 years
- condition 4 to 3 – 10 years
- condition 3 to 2 – 5 years
- condition 2 to 1 – 2 years.

This means, for example, that deterioration from condition 4 to condition 1 will take 17 years, assuming no maintenance.

When this is applied to the housing stock in its current condition, the repair costs rise quite quickly over the next 20 years (see Figure 8). The slope of the line shows the amount of maintenance increases by about $2,100 for each year of delay. This is an increase of about 18% on top of the current amount of required maintenance ($12,000). It indicates that owners are financially better off doing work today rather than deferring, even if they need to borrow money to do so.

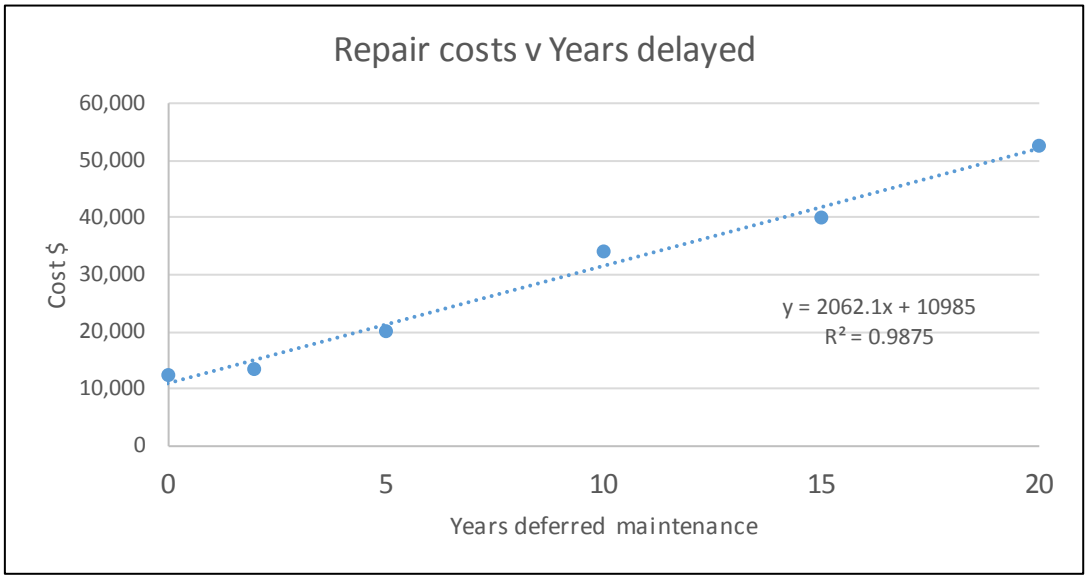

Figure 8. The cost effects of deferred maintenance.

2.7 Designing for maintenance

Buildings need to be maintained for many reasons to ensure continued functionality as designed and to meet legal obligations.

There are many factors that influence what type of maintenance and the overall amount of maintenance that will be required. The way a building is designed has an impact on all of those factors.

2.7.1 Designing dwellings for maintenance

How a building is designed will have a significant impact on the maintenance it will require throughout its lifetime. Good design can "facilitate the practical functions such as consideration of maintenance" (Lin, Yang & Skitmore, 2003).

Specifically, design can impact on (Pringle, 2015, p. 7):

- the amount of future maintenance required
- the cost of the required maintenance, particularly if maintenance gets deferred
- the ease of maintenance or ability to carry it out
- the ease of replacement or upgrading of failed, faulty or worn components or equipment
- the durability and serviceability of components
- the life cycle cost of the project.

BRANZ provides extensive advice for designers on how to design homes for long life and easy maintenance (Pringle, 2015, p. 16)

> Buildings are complicated. As part of the design process, the building designer must balance a range of potentially conflicting considerations such as:
>
> - client (owner/developer) attitudes to costs and maintenance
> - material and finish costs
> - material and finish performance
> - equipment cost and performance
> - environmental conditions, both internal and external
> - maintenance requirements and associated costs for the materials/components selected
> - complexity of design and detailing
> - aesthetics
> - access
> - the expected refurbishment cycles for the building
> - building use and potential changes in use during its life
> - potential changes in available technology
> - safety.
>
> ... [The publication aims to] outline maintenance issues that should be considered as part of the design process so that complicated buildings are able to be effectively and economically maintained.

The guide does not specifically focus on MDH nor provide particular advice for MDH. However, as MDH covers a range of building types, most sections of the guide do apply. Where MDH differs for many buildings is that the multi-units generally have lower external envelope areas compared to detached houses of the same floor size.

This means the cost of maintaining the wall and roof claddings per m^2 of floor area, may be lower than for detached housing. However, the cost will depend on what needs to be maintained.

Offsetting this cost savings is the cost of accessing upper floors for maintenance. For MDH buildings in the 3–6 storey range, this will likely be more expensive than it is for 1–2-storey detached houses or 1–2-storey MDH. For example, above 3 storeys, some consideration is needed on how cladding maintenance and window cleaning is to be done. Balconies are useful for this, otherwise a suspended work platform fixed at roof level or periodic scaffolding may be necessary.

Apartments may have a common heating and ventilation system, and maintenance access to ducts and motors may need to be provided. Likewise, supply and waste piping need ready access for maintenance purposes.

3. MDH maintenance

Maintenance of MDH structures presents some of the same challenges as for stand-alone dwellings. However, there are some specific challenges for taller MDH as well as some specific advantages.

The challenges can partly be because maintenance of MDH is directly related to how it is built. It is also partly because MDH has features such as common walls, specific fire-retardant design features and soundproofing that are not commonly found in stand-alone houses. MDH may also be built in a way that makes maintenance more challenging because of building height (and therefore access for external maintenance) and limited outdoor area. Multi-storey MDH presents challenges as well, although it has many of these in common with high-rise buildings. The literature is clear that MDH overall is often associated with poor-quality construction, design and amenity (Slocombe, 2010). Poor-quality materials and construction are two frequent criticisms of higher-density housing in general (DBH, 2009). This will mean more maintenance will be required.

It is important to note, however, that MDH can be easier and cheaper to maintain initially than stand-alone houses. This is a factor that can influence the decision to purchase MDH. Some people buy MDH because of “the appeal of newer and lower maintenance houses and sections” (Slocombe, 2010). There is an appeal in reduced outdoor maintenance, in particular, for some buyers (Scott, Shaw & Bava, 2006).

MDH maintenance may be managed differently than stand-alone homes. As with high-rise, MDH has two areas of responsibility in terms of maintenance that needs to be carried out. There is maintenance work that is the responsibility of the body corporate (mostly common areas and shared facilities), and there is maintenance work that is the responsibility of the unit owner.

MDH requires maintenance or it will not function as specified. If it is not maintained as it needs to be, there will be performance issues. The costs of not maintaining are not insignificant, both to the owner and to the nation in terms of the value of our housing stock (see section 2.6).

3.1 MDH and the Building Code

Maintenance of MDH has different challenges from maintaining stand-alone houses. This is because it is built differently, even though it is built to the same Building Code that applies to all dwelling construction in New Zealand. Although the maintenance activities may be the same, access to taller buildings may be more difficult.

The Building Code in New Zealand is performance-based. The Building Code gives an objective and prescribes functional and performance requirements that buildings must comply with for their intended use. (The Building Code is found in Schedule 1 of the Building Regulations 1992. Although those regulations have been revoked, Schedule 1 remains in force.)

The Building Code sets performance-based requirements for all new buildings. Code compliance can be demonstrated in several ways, including through the use of Acceptable Solutions, Verification Methods or alternative methods. (Alternative methods become Alternative Solutions once they are accepted by a BCA as complying

with the Building Code). Being performance-based, the Building Code allows for innovation. Applicants have the freedom to propose an innovative solution.

Acceptable Solutions are prescriptive guidelines outlining what works for what purpose. Verification Methods outline the testing or calculation methods necessary to show compliance with the Building Code. If a building design/finished building fully complies with an Acceptable Solution or Verification Method, a building consent must be issued. Code Compliance Certificate must be issued by the BCA if the building is constructed in accordance with the consented documentation.

An alternative method differs, in part or wholly, from what is set out in an Acceptable Solution or Verification Method. There may be a number of reasons for the use of an alternative method. There may not be an Acceptable Solution or Verification Method for the proposed construction. The building work may incorporate design features that fall outside the scope of an Acceptable Solution or Verification Method. The licensed building practitioner (designer, architect, engineer) may not want to use an Acceptable Solution or Verification Method. The onus is then on them to prove that their alternative method meets a particular part of the Building Code and prove to the BCA that their approach is satisfactory. Taller MDH will fall into this category of work.

According to the New Zealand Productivity Commission (2012), “building and design professionals are largely reliant on their own experience and the experience of their peers for learning about and determining how best to move to a new or non-standard technique through the building consent process” (p. 163).

Changes are made to the Acceptable Solutions and Verification Methods from time to time to ensure that they reflect the latest research, knowledge and building practices. New editions of many Acceptable Solutions and Verification Methods, with updated standards references, were introduced on 1 January 2017. Standards are documents that define materials, methods, processes and practices. There are over 200 New Zealand and Australian standards referenced.

There is no general Acceptable Solution for MDH in terms of the Building Code, and each design for MDH construction needs to be assessed against Building Code performance requirements. Designs are often unique. This may mean maintenance needs to be specifically designed to meet the needs of a particular building. For example, common walls are built to a different performance standard than walls in stand-alone dwellings in terms of both protection from fire and sound.

3.2 MDH design and construction

Design and construction quality has significant impact on maintenance and renewal requirements. However, in practice, buildings are not always ideally designed or constructed to be maintained. This may even be the case where design and construction has met all the requirements of the applicable legislation.

The Building Act sets out the need for developers to meet the requirements of the Building Code and the responsibility of the local BCA to ensure compliance with the Building Code. New Zealand Building Code clause B2 *Durability* sets out the minimum durability requirements with normal maintenance. Building elements must, with only normal maintenance, continue to satisfy the performance requirements of the Building Code over the life of the building. The minimum time depends on the use of those building elements and the degree to which they can be accessed and their maintenance requirements detected (see Figure 1). It is up to the building owner to

ensure that these elements are inspected and maintained to ensure performance requirements continue to be met.

As discussed in section 2.2.1, under the Building Act, some MDH buildings require an annual warrant of fitness and compliance schedule for specified systems within the building. Specified systems include automatic systems for fire suppression, emergency lighting systems and lifts, escalators or other systems for moving people or goods within buildings. These systems require oversight and immediate maintenance when necessary. They are expected to be operational throughout the life of the building and perform as designed at all times.

3.3 Roles and responsibilities

Maintaining MDH can be complex. It relies on a system where responsibility for maintenance is shared between unit owners and the body corporate. This is the same situation owners of apartments find themselves in, and they are covered by the same regulations. Body corporate managers also have a role to play although this is not regulated by the Unit Titles Act.

3.3.1 Unit owners

Once MDH is in place, responsibility for maintenance transfers to the new owner(s). Where there are multiple new owners, the Unit Titles Act provides a legal framework for the ownership and management of land and associated buildings and facilities. The Unit Titles Act provides for:

- registration of unit titles
- guidance on operation of bodies corporate
- a disclosure regime to provide information and transparency for the buying and selling of units
- establishment of a regime for funding any maintenance of a building
- establishment of a system for resolving disputes.

The developer of each MDH construction applies for a unit title subdivision to allow for individual ownership of parts of a building within the complex. The unit title can be bought and sold or leased or mortgaged. It is made up of three components:

- ownership in the particular unit and accessory units (such as a parking space)
- an undivided share in the ownership of the common property
- an undivided share in the ownership of the units if the unit plan is cancelled.

The Unit Titles Act sets out the responsibilities of unit owners and bodies corporate for maintenance of individual and common areas. Under section 80, the unit owner is responsible for maintenance and repair of the interior of a unit. In some instances, especially in developments with detached units, owners might also be responsible for maintenance and repair of the exterior of units and exclusive use areas. Unit owners must get written consent from the body corporate if they want to make any alterations or additions that will materially affect other units or common property.

3.3.2 Bodies corporate

At the same time as unit plans are deposited in the Land Registry Office, a body corporate is established. The body corporate is the legal entity that represents all owners in a multi-unit property and is comprised of all unit owners. It is required to meet at least annually and can call an extraordinary general meeting at any time to

consider any matter – for example, agreement may be required to undertake urgent repairs. A special resolution is required for decisions made by the body corporate that could have significant consequences for unit owners – for example, selling part of the common property.

Under section 138 of the Unit Titles Act, the body corporate is responsible for maintaining the common property owned on behalf of the unit owners including infrastructure and building elements. Infrastructure is defined as including pipes, wires, ducts, conduits, gutters, watercourses, cables, channels, flues, gas, electricity, oil, shelter, fire protection, security, rubbish collection, air or any other services or utilities. Building elements include the structural integrity of the building, exterior aesthetics and look of the building and health and safety of persons who occupy or use the building (Buddle Findlay Ltd, 2011).

The body corporate is also responsible for payment of rates, setting of levies, insurance and valuation, setting operational rules (beyond the default rules specified in the Unit Titles Regulations 2011), annual accounts and annual general meetings. The body corporate levies may include an amount to cover the costs of repair and maintenance to common property or to building elements and infrastructure that serves more than one unit. The body corporate may also recover the cost of repairs from a specific owner where:

- the repair or maintenance benefits the owner substantially more than other unit owners
- the repair or maintenance is carried out on property contained in the owner's unit
- the owner causes damage that necessitates the repair or maintenance work.

The elected body corporate chair has significant influence over the decisions made by a body corporate, including those about maintenance. This influence is through their range of duties, including calling, chairing and minuting meetings, recording resolutions and keeping financial accounts and records. They also sign documents on behalf of the body corporate and can prepare and issue notices of resolutions to be passed without a general meeting.

The body corporate committee (where it exists) also has influence over decisions made by the body corporate. A body corporate may delegate some of its duties and powers to a committee, including those relating to administration and management of the development. Where there are up to nine units, the body corporate may form the committee. Where there are 10 or more units, a committee must be formed unless the body corporate, by special resolution, decides not to do so.

The Unit Titles Act also provides for a disclosure regime prescribing what information should be disclosed when unit titles are sold. According to the regulations, three disclosure statements must be made. The purpose of the statements is to protect buyers by providing them with the best information about a unit, the development and the activities of the body corporate. In section 33 of the Unit Titles Regulations, this includes:

- whether any costs relating to repairs to the unit are unpaid
- the amount of the contribution levied by the body corporate
- details of maintenance the body corporate proposes to carry out in the next year
- whether the unit or the common property is, or has been, the subject of a claim under the Weathertight Homes Resolution Services Act 2006.

3.3.3 Body corporate managers

Body corporate managers are not regulated by the Unit Titles Act. However, such companies are quite prevalent, and they play an important part in operating and managing MDH. It has become common practice for larger developments to appoint a professional body corporate manager, but many smaller bodies corporate also do so. Appointing a body corporate manager does not in any way affect either the individual or collective property rights held by a unit owner.

Body corporate managers support unit holders and bodies corporate in the day-to-day operation of their complexes. The functions generally undertaken by a body corporate manager are the duties of a chair. Body corporate managers also often prepare body corporate budgets and disclosure statements for prospective buyers, organise repairs and maintenance and assist in the development of long-term maintenance plans. Often, a body corporate manager is contracted to perform some of the services of the body corporate on behalf of the unit owners. Companies that provide professional body corporate services typically offer services such as:

- arranging maintenance of common property
- organising facilities for meetings
- administering the body corporate's financial activities.

3.4 On-going maintenance

3.4.1 Maintenance plans

Once the buildings are in place, each multi-unit dwelling will have unique maintenance requirements. These will depend on a range of factors, including the materials used in construction, building defects in construction, complexity of the building and design and placement of services and utilities. Geographic location, whether it is single or mixed use, access to the building(s) and drainage and flooding arrangements will also impact on maintenance needs (Pringle, 2015).

Maintenance will be a continuous requirement throughout the life of a building. Plans for maintenance can reflect one (or more) of four main approaches – condition-based, predictive, cyclical (time-based) or response-based (see Table 3).

Table 3. Maintenance approach.

Approach	Planning basis	Maintenance carried out
Condition-based	Regular monitoring and inspection	According to need
Predictive	Extensive diagnosis and monitoring	As predicted
Cyclical (time-based)	Scheduling	As scheduled
Response-based	Emergency	When an emergency or opportunity arises

While there is no requirement to develop a maintenance plan for each dwelling, section 116 of the Unit Titles Act requires a long-term maintenance plan to cover maintenance of common areas. The purpose of a long-term maintenance plan is to identify future maintenance requirements, provide a basis for the levying of owners and provide on-going guidance on maintenance decisions.

The plan must cover a period of at least 10 years from the date the plan was created or the last review of the plan and must:

- describe the common property, building elements and infrastructure of the unit title development and any additional items that the body corporate has decided by ordinary resolution to include in the plan
- identify those items that the body corporate may decide by ordinary resolution not to maintain for any period during the lifetime of the plan
- state the period covered by the plan
- state the estimated age and life expectancy of each item covered by the plan
- state the estimated cost of maintenance and replacement of each item covered by the plan
- state whether there is a long-term maintenance fund and, if there is, state the amount determined by the body corporate to be applied to maintain the fund each year
- state who has prepared the plan.

MBIE has produced a template for use by bodies corporate,[5] which will guide them in terms of what the required content is.

Section 117 of the Unit Titles Act specifies that a body corporate must establish and maintain a long-term maintenance fund for expenditure relating to the long-term maintenance plan. Under the Act, a body corporate can decide not to establish a fund. This provision was intended to exempt small bodies corporate from the task of creating and maintaining a fund. Having no formal fund also allows bodies corporate to increase or decrease levies at any time when unexpected maintenance is required on the building (Unit Title Working Group, 2016).

3.5 MDH maintenance costs

There are costs associated with maintaining MDH that may be specific to this housing typology. As discussed in section 2.2.1, the Building Act requires all buildings (apart from single family dwellings and attached townhouses) with specified systems to have a building warrant of fitness (BWOF).

Keeping this up to date will require regular inspection and maintenance of the specified systems within a building. The BWOF needs to be renewed every 12 months. It will be issued following an inspection of the building to confirm it has been maintained as required in the building's compliance schedule. This is issued at the completion of consented building work along with a Code Compliance Certificate.

It is difficult to assess what, when and how much this might be in any particular building. Special levies may be required to significant upgrades of large items such as lifts or to cover increasing insurance premiums, for example.

3.6 MDH operating costs

Owners of MDH are required to contribute to cover body corporate costs where a body corporate is required. This is by way of an annual fee.

Legally, bodies corporate can charge fees:

[5] www.tenancy.govt.nz/assets/unit-titles/ltmp-body-corporates-complex.doc

> ... to cover day-to-day expenses such as maintenance, insurance premiums, administration and utility charges for common services e.g. outdoor lighting. There may be special one-off levy if the yearly fee does not cover something e.g. a lift or window replacement. In some cases, the body corporate may ask you to pay them back for the costs of repair or maintenance work – for example if it benefits you more than the other owners, is carried out on your unit only, or if you caused the damage which required the repair work. (Citizens Advice Bureau, 2017)

Body corporate fees are pro rata the costs each apartment owner pays to make sure the building and all its common areas like hallways and gardens are well maintained. They also cover building insurance, rates and legal costs. This may include costs for a body corporate manager or management company. These fees are compulsory.

Body corporate fees can vary considerably but are generally related to the value of the building and size of the unit. Table 4 outlines an example of body corporate fees for different MDH complexes in Auckland and Wellington. It is important to note that some body corporate fees cover rates and insurances and others don't.

Table 4. Example of body corporate fees for representative MDH.

Auckland – average[6]	**Annual fee**
50 m^2 1-bedroom apartment	$3,500–4,500
65 m^2 2-bedroom apartment	$4,000–5,000
Wellington[7]	**Annual fee**
170 m^2 terraced housing valued at $500,000	$1,400
100–140 m^2 3-bedroom apartment valued at $500,000	$4,000–10,000
180m^2 3-bedroom apartment valued at $570,000	$12,000+

In addition to regular levies, the body corporate may require additional funds via a special levy, because they:

> ... cannot always anticipate all of the expenses incurred by a Body Corporate in a financial year. Where unexpected expenses arise, the Body Corporate must, by ordinary resolution, fix a special contribution to be levied on lot owners – often referred to as a "Special Levy". (Piper Alderman, 2015)

Generally, costs can be expected to roughly rise in line with inflation.

[6] Source: https://www.apartmentspecialists.co.nz/much-body-corporate-fee/
[7] Source: http://unconditional.co.nz/colinkelly/2011/02/10/badmouthing-body-corporate-fees/

4. MDH maintenance challenges

This section considers common problems typically associated with maintenance of MDH. It is based on interviews with building experts and bodies corporate, recent literature and the findings from the government review of the Unit Titles Act (New Zealand National Party, 2016). Where proposed changes to the Unit Titles Act have the potential to address the identified problems, these are noted.

Higher-density housing is often associated with poor-quality construction, design and amenity, particularly by the community and media (Slocombe, 2010). Costly shortcuts can become evident in the maintenance of multi-unit dwellings (Unit Title Working Group, 2016). These issues are attributed to:

- stakeholders having different incentives or motivations toward maintenance
- the levels of skills and knowledge of those involved in planning maintenance
- the cost of emergency repairs, such as earthquake damage or strengthening or to address weathertightness issues
- stakeholder considerations
- stakeholders' influence in how or whether maintenance is carried out in MDH.

These stakeholders include the developer, body corporate, body corporate manager, unit owners and their insurance, maintenance, legal and financial advisors. While the Unit Titles Act sets out the roles and responsibilities for maintenance, there is room for confusion. Views given in interviews were that the responsibility could fall to:

- the body corporate
- the body corporate chair
- the body corporate committee
- the body corporate manager
- parties contracted by the body corporate manager, committee or chair
- individual owners.

However, the amount of maintenance required ultimately comes back to requirements set by the developer prior to handover of the building to the new owners.

4.1 Developers

Outside the requirements of the Building Act, there are few incentives for developers to consider or limit the on-going costs of maintenance or even to ensure maintenance is possible. *Designing for Maintenance* (Pringle, 2015) describes issues in the design and construction stages, including that:

- it is not a key consideration for developers, owners or designers
- there is a lack of understanding of maintenance requirements
- there is a 'build it now and fix it later' attitude
- there is a lack of awareness of the implications of design and cost decisions on building maintenance.

These issues are heightened when building is a speculative activity (as is often the case in MDH), and short-term profit is prioritised over long-term considerations. Easthope (2015) notes that, in Australia, it is uncommon for the developer to remain involved in the long-term management of a strata scheme (unit title scheme) once all lots have been sold. Issues arising may include limited physical or legal access to

façades for cleaning or painting. One council representative interviewed for this research noted physical access for maintenance was a problem in affordable housing, where the incentive was to fit as many dwellings as possible on a section. In a market where potential buyers are focused on the upfront cost of their dwelling and not the lifetime cost, developers bear all the costs and none of the benefits from designing and building low-maintenance or easily maintained housing.

The developer also has a major influence on future maintenance of MDH as they set in place the parameters for the building design and the level of specification for materials and finishes. Under section 139 the Unit Titles Act, the developers must "exercise reasonable skill, care, and diligence and act in the best interests of the body corporate". The aim is to ensure the terms of service contracts achieve a fair and reasonable balance between the interests of the service contractor and body corporate. However, arrangements that are made for maintenance depend wholly on the goodwill, knowledge and skills of the developer, and they may enter into long-term maintenance contracts that do not suit later owners (Blandy, Dixon & Dupuis, 2006). Buddle Findlay Ltd (2011, p. 20) found that, in New Zealand, there has been criticism of contracts with terms that are extremely favourable to the developer or to entities that the developer controls. The Unit Titles Act allows the body corporate to review some of these contracts. The body corporate may apply to the courts in some circumstances for an order terminating service contracts entered into by the developer. However, such orders are only available if it appears to the Court that the contract is "harsh or unconscionable" (Unit Titles Act section 140).

Further, it is not in the interests of the developer to clearly identify long-term maintenance requirements. Low levies can make investment in MDH more attractive to potential unit owners. However, this can mean that maintenance is deferred, resulting in higher costs for owners at a later date (Unit Title Working Group, 2016). This is an obstacle for prospective purchasers to assess the lifetime cost of their investment.

4.2 Owners

Many people buying into MDH are doing so for the first time and are unaware of their legal rights and obligations and those of the body corporate. While MBIE[8] and the HOBANZ[9] websites target information to owners in MDH, this information is not accessed by all who need it (Unit Title Working Group, 2016).

The complexity of some aspects of MDH can lead to confusion and misunderstandings. One potential area of misunderstanding is in the definition of common property. As this definition determines maintenance responsibilities, it is critical that all owners have a clear understanding. According to some body corporate chairs interviewed, there is no standard approach, and the division of property is determined by how developers choose to describe what is common and what is not.

While the disclosure regime outlined in section 3.3.2 is intended to equip purchasers with sufficient information about their potential rights and responsibilities, they can sometimes struggle to obtain sufficient information. Issues include the following:

- A long-term maintenance plan may not exist or may be inadequate or expired. The plan may be written in a way that is not easily understood or exclude certain components.

[8] https://www.tenancy.govt.nz/uta/
[9] https://hobanz.org.nz/guidance-support/body-corporate

- A long-term maintenance plan is only available to prospective purchasers who specifically request the additional disclosure statement. Prospective purchasers must pay for the additional disclosure statement. This information may not be available to the purchaser until after settlement.
- Body corporate financial statements, contracts and insurance policies can only be accessed when a contract is in place.

A concern is that purchasers of units may not be aware that they will be required to fund the replacement or repair of major components as a separate levy. When purchasers are buying before completion of construction, the developer is required to provide the body corporate with a turnover disclosure statement. Some developers may not provide this, and even if it is provided, it may not be passed on to prospective purchasers. This technical document can be difficult to understand, and there is limited buyer recourse in cases of incomplete or false disclosure (MBIE, 2016b).

Often, a reason for purchase is a perception that maintenance costs will be lower than for stand-alone housing (Dunbar & McDermott, 2011). This perception can be unfounded, especially where maintenance has been deferred or emergency repairs needed. When owners have different perceptions of the return on investment of maintenance or different abilities to pay costs, planning what maintenance will be carried out and when can be difficult. Complicating matters, owners of units might be one step removed from maintenance requirements, as areas to be maintained may be quite separate from the owner's unit.

It can also be difficult to ascertain how to apportion costs when work is done for the benefit of one or more units but not all units. Under section 126 of the Unit Titles Act, costs of such repairs are recoverable from only those who benefit, and this also applies when work benefits some owners more than others. However, section 138 states that any costs incurred by the body corporate that relate to repairs of building elements and infrastructure contained in a principal unit are recoverable by the body corporate from the owner of that unit as a debt.

Owners may be long-term or short-term residents or investors, be providing family members with medium-term accommodation, be using the unit as a 'city pad' or have any number of reasons for ownership. Within one development, the body corporate can comprise a massively diverse range of owners, all with different motivations and abilities to plan for and pay for maintenance.

4.3 Body corporate managers

People interviewed for this research noted a concern that body corporate managers can be responsible for substantial amounts of money, and current protections may be inadequate. There are no minimum standards of skills and knowledge relating to bodies corporate, no professional standards or codes of conduct for body corporate managers or chairs and no criteria regarding selection and appointment of managers.

Typically, body corporate managers arrange maintenance of common property, organise meetings and administer financial affairs. As such, they can have a significant impact on setting and administering long-term maintenance plans. Dissatisfaction with body corporate managers is well recorded (Levy & Sim, 2014). One reason for the dissatisfaction is that unit owners felt body corporate managers were more interested in protecting the developer rather than working on behalf of owners. Dupuis and Dixon (2004) note that body corporate managers can be compelled to operate with tight

budgets in a strongly competitive environment, especially when smaller developments (such as those found in MDH) are involved.

MBIE (2016b) in its review of the Unit Titles Act identified professionalism in body corporate management as an area for potential change. Proposals include better clarifying in legislation of the role of body corporate managers and requiring membership of a professional body, but the type of professional body is not specified.

Owners on the body corporate committee have a disproportionate ability to make or influence decisions. This inequity can be exacerbated when the body corporate committee is formed of a higher proportion of one type of owner. For example, in Australia, body corporate committee members are increasingly retirees. Easthope (2015) found that it is less in the interest of some retirees to invest in long-term maintenance and improvement of the common areas of their MDH buildings. It was also often not in their power to pay for certain repairs, even if they wished to do so. Maintenance and upgrading was in the interest and was more often the choice of many younger owners. Younger owners were more often willing to increase spending on their buildings to improve capital gains. In New Zealand, it is likely that retirees also prevail on body corporate committees.

4.4 Long-term maintenance plans

A long-term maintenance plan should clearly identify common areas and responsibilities for maintenance. However, many MDH developments do not have a long-term maintenance plan in place or the plan is deficient (Gray, 2016). Interviews undertaken for this research confirmed it is not uncommon for bodies corporate to operate without proper long-term planning instruments, instead relying on casual or short-term arrangements. The following case study shows how, even with a small number of units, decisions can be difficult if there is no long-term maintenance plan.

Case study: challenges in the absence of a plan

Description: Three units
Built: 1970s
Location: Wellington
Emergent issue: Damage to the roof

It was clear to owners that the roof of the three-unit building needed fixing. While the state of the roof impacted the value of the building, so did the size of the levy proposed to pay for repairs. To make matters worse, the extent of the fix was unclear, with conflicting information on whether the roof could be repaired or needed to be replaced. Other maintenance was also required, adding to the potential cost. There had been no money set aside for repairs such as this. While only three units were involved, there was scope for disagreement. A majority of two owners could bind the third owner to decisions, including those with costs attached.

Discussion between owners resulted in agreement to:

- repair, rather than replace, the roof
- commission a long-term management plan (10-year) with an associated budget for maintenance
- contract the services of a body corporate management company.

The long-term management plan has been provided under contract and is available online for all owners. It is updated whenever repairs are made, and under the plan, the levies will be reviewed at each annual general meeting.

Often, a body corporate will depend on independent advice from experts in the building industry, particularly relating to the maintenance requirements of common areas of the building. However, when an industry expert prepares a long-term maintenance plan for a body corporate, there is an incentive to overstate requirements so they will not be held liable for inadequate advice. This could result in owners paying more for maintenance than necessary. Sometimes, plans are prepared by people that do not have the appropriate qualifications or competencies (Unit Title Working Group, 2016).

Issues with plans include:

- being out of time or expired
- a lack of clarity, especially where there is no easily digestible summary
- omission of building defects
- inaccurate description of maintenance requirements
- inadequate consideration of on-going maintenance costs, especially for long-life components such as roofs, exterior cladding and joinery
- omission of major components.

In some cases, the omission is purposeful. MBIE (2016b) notes that, in some instances, bodies corporate choose to exclude major components from long-term management plans because these components fall outside the 10-year timeframe. The result is that appropriate maintenance is unlikely to be planned for these components, and it is possible that owners will not set aside sufficient money to pay for repairs.

4.5 Costs and funding

Funding maintenance can be a challenge, especially when costs are high. When no contingency has been set aside in a long-term maintenance or replacement fund, major repairs can be difficult to fund. In the last 20 years, repairs have been required due to earthquakes (and requirements to meet earthquake strengthening standards) and moisture problems (leaky homes).

Special levies, loans, insurances and legal action are options for bodies corporate when the long-term maintenance fund is insufficient to cover the cost of emergency repairs. However, owners may lack the ability to pay special levies, loans may be unavailable or at high cost, insurance companies may be unwilling to contribute and legal action is inherently uncertain. Loans can be unavailable due to the need for unit owners to pledge their dwelling as collateral. In some jurisdictions where some owners do not pay their share of capital costs, the body corporate has a duty to initiate court proceedings against an individual unit owner. In some places, they also have the right of compulsory sale of their units.

An unknown number of MDH complexes may be considered leaky homes. Costs to repair a leaky home can be high, with estimates of $160,000–280,000 per unit for apartment complexes (Unit Title Working Group, 2016). If the complex is more than 10 years old, there is no redress through the government's financial assistance for repairs and legal action may not be successful. This means that owner levies or loans are the only available option.

Insurance premiums for bodies corporate in the Wellington region have increased significantly because of losses among overseas reinsurers after the Christchurch earthquakes. One example given in an interview was that annual premiums increased from $58,000 to $248,000, then decreased to $119,000. In response, levies increased by around one-quarter.

Section 116 of the Unit Titles Act specifies that levies may include an amount to cover the costs of repair and maintenance required to be carried out by the body corporate. Under section 126, the body corporate may also be able to recover the costs of repairs from owners in the following circumstances:

- Where the repair or maintenance benefits some owners substantially more than other unit owners, the body corporate can recover the costs from the owners that benefit.
- Where the repair or maintenance is carried out on property contained in a unit, the body corporate can recover the costs from the owner of that unit.
- Where an owner causes damage that necessitates the repair or maintenance work, the body corporate can recover the costs from that owner.

4.6 Leaky homes

In New Zealand, significant issues have arisen that require a repair. These are the leaky home syndrome and new requirements to assess and strengthen earthquake-prone buildings.

As at April 2017, 3,724 dwellings were involved in 662 claims under the Weathertightness Homes Resolution Services Act 2006 (MBIE, 2017c).[10] Many of these claims will relate to MDH. The distribution of claims indicates that multi-unit dwellings are particularly affected in Auckland City, Tauranga, Queenstown Lakes and Greater Wellington. Over time, demand for weathertight services has changed from single to multi-unit dwellings (MBIE, 2016a).

It is likely there are some buildings in MDH that are leaky homes and are over 10 years old. In these cases, the Weathertight Homes Resolution Services Act does not apply, and owners are precluded from obtaining funding from the government for repairs or accessing the dispute resolution services.

The following case study describes the claim and repairs process for owners of a leaky building.

Case study: leaky buildings

Description:	17 units in three buildings – four with weatherboard cladding and 13 with combined monolithic and weatherboard cladding
Built:	2002
Location:	Wellington
Emergent issue:	Weathertightness issues

Soon after completion, problems with the buildings' membranes and flashings became evident. In response, the body corporate instigated investigations to determine the cause of leaks and maintenance requirements. Some owners were sceptical of the

[10] The Weathertight Homes Resolution Services Act was enacted in 2002 and repealed in 2006.

investigations, believing that contracted companies could overestimate the extent of damage and resulting scope and cost of repairs.

After non-invasive testing, building consultants advised that targeted repairs, including repainting, would resolve the issues. However, after these targeted repairs were completed, some units continued to leak. It became apparent that further repairs were required. A second investigation indicated the further repairs would be major.

The body corporate then obtained agreement from all owners to:

- undertake repairs, upgrade the building to 100% of all code and reclad using low-maintenance cladding
- lodge a claim with the Weathertight Homes Resolution Service
- instigate High Court action
- set a levy to cover the cost of legal and technical advice.

The claim was settled at mediation, with money coming from associated parties and the government's Financial Assistance Package. Levies were then set to cover the balance of the cost of repairs. These were purposely set higher than the estimated cost of repairs to offset any unforeseen overruns. Project management services were provided by the body corporate chair, with levies covering an honorarium for this services. Before construction could start, construction companies demanded assurance that the body corporate could pay the full cost of repair. This assurance was provided by a resolution passed at an extraordinary general meeting.

Repairs are still under way, with total losses estimated at $130,000 per owner. Relationships and trust were considered essential to get decisions and to commission construction work.

4.7 Earthquake strengthening and MDH maintenance

The 2011 Christchurch earthquake and 2016 Kaikoura earthquake have heightened awareness of risk from earthquakes and resulted in new requirements for owners of multi-storey buildings, including those in medium-density housing. The first of these requirements is to secure unreinforced masonry parapets and façades on buildings in certain areas of Wellington City, Hutt City, Marlborough District and Hurunui District (MBIE, 2017b). In this case, the council is responsible for issuing notice that an owner has 12 months to secure the parapets and façades. Government and affected councils established a fund of approximately $4.5 million to carry out this work, and owners are able to apply to this fund for up to half the costs involved.

The second requirement has been set through the Building (Earthquake-prone Buildings) Amendment Act 2016,[11] which comes into force on 1 July 2017. This Act aims to ensure consistent management of buildings for future earthquakes (MBIE, 2017a). The Act categorises New Zealand into three seismic risk areas, based on the risk of earthquakes. It sets timeframes for identifying or taking action to strengthen or remove earthquake-prone buildings. The Act applies to residential buildings that are 2 storeys or more and have three or more dwellings. As such, most MDH falls within the bounds of this legislation.

[11] Previous requirements under the Building Act required territorial authorities to set their own individual policies.

Once the Act is in force, councils will identify potentially earthquake-prone buildings and notify owners. Notified owners will need to get an engineering assessment and submit this to the council. If the building is confirmed earthquake-prone, a notice will need to be displayed on the building and remedial work undertaken within a specified timeframe (see Figure 9).

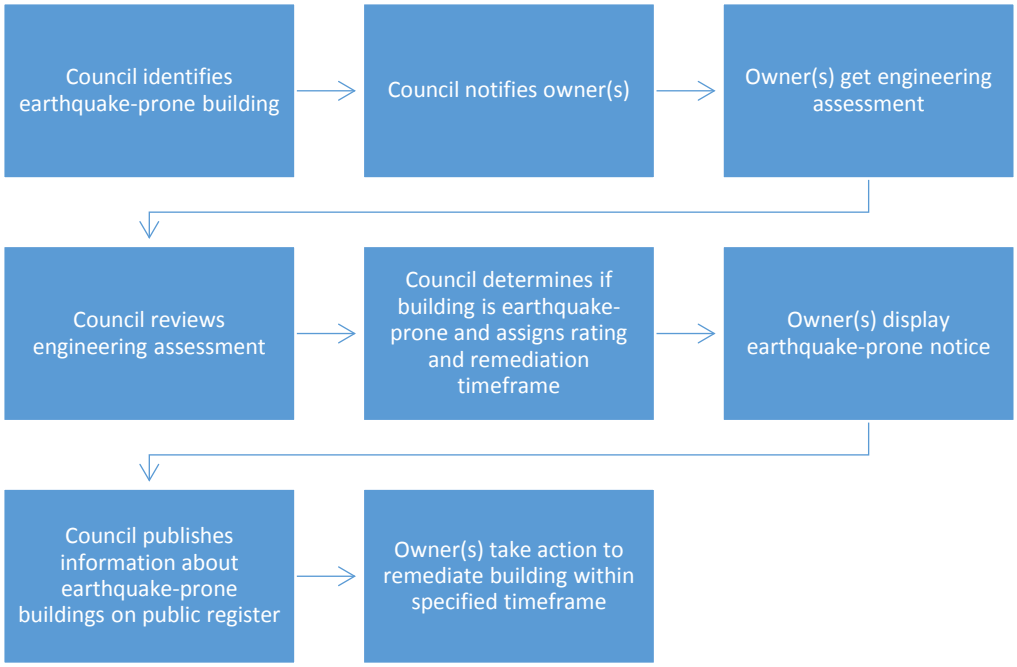

Figure 9. Earthquake-prone building process.

These new requirements may result in significant unbudgeted costs for assessment and remediation. The public nature of the earthquake-prone building process is also likely to result in a reduction in value for units until remediation is complete. One person interviewed considered that many bodies corporate do not have the knowledge to commence the process or even to interpret the technical requirements.

5. Addressing MDH maintenance challenges

This part of the report identifies the ways in which maintenance of MDH can be improved. It draws on the interviews with key informants along with the innovations recently introduced into the Australian MDH market. While no magic bullet has been found, Easthope, Randolph and Judd (2009) consider that the following cultural conditions are needed to ensure good management of maintenance in MDH:

- Acknowledgement of all owners of their responsibilities as members of a body corporate and joint owners of a common property.
- An active and responsive executive committee and, where applicable, body corporate manager.
- A good relationship and information flow between the committee and owners and tenants regarding major repairs and maintenance.
- A regular maintenance schedule and plan for capital works, based on expert advice.
- Repairs and maintenance undertaken following a transparent process for contractor selection.

These conditions are possible with a change in stakeholder incentives and motivations, along with a change in the skills and knowledge of all parties and improved planning horizons.

5.1 Stakeholder incentives and motivations

Stakeholder incentives can be changed by alterations to the regulatory settings for MDH. This might include the following:

- Regulating the levies to be set by bodies corporate to ensure they are relatively consistent and fair throughout the life cycle of the building. For example, this could entail ensuring levies are charged for replacement of the roof from when the building is new.
- Requiring a schedule for regular maintenance and major capital works.
- Requiring independently prepared life-cycle costings to be provided to the body corporate on completion of the development.

A more comprehensive requirement might be a building bond, similar to that about to be implemented in New South Wales. From 1 July 2017, developers will be required to lodge a 2% bond for the final contract price of the building as security to fix any defective work. Further, a maintenance schedule is required at the first annual general meeting of the body corporate. Two independent building inspection reports are also required from developers. The first is due 15–18 months after completion of the building and the second 21–24 months after completion.

5.2 Skills and guidance

Improving the skills and knowledge of all parties involved in MDH appears to be a priority. For those considering buying a unit, it is vital they know what information is relevant, how to ask for information and how to interpret the information they are given.

5.2.1 Body corporate manager skills

While education would not address the perceived lack of interest in body corporate matters and owners' concerns, it may assist in growing a more professional body corporate manager workforce. Easthope and Randolph (2008) note that, if the supply of skilled professionals does not keep pace with demand, problems of maintenance are likely to increase. In New Zealand, self-regulation of body corporate managers is a recent phenomenon. According to a press release from the Body Corporate Chairs' Group, the industry itself was calling for regulation after fears were raised about the amount of money being held by managers (Gibson, 2015). Some body corporate management companies are voluntarily holding themselves to standards, including adopting accounting standards and having accounts audited annually. Finally, a New Zealand chapter of the Australian Strata Community Association has been formed. It has established a code of conduct for members and is developing its own education and accreditation programme.

5.2.2 Guidance on roles and responsibilities

Easthope et al. (2009) suggest that government could provide better information and education to bodies corporate. This might include information on the roles and responsibilities of:

- owners – as members of a body corporate and joint owners of common property
- body corporate committees and managers – including how to ensure information flows between committees and owners.

MBIE (2016b) has noted the need for government to provide greater leadership to the sector, including more advice and education. It has indicated it will review and improve its guidance as well as provide further guidance on body corporate and committee governance. Similarly, the Body Corporate Chairs' Group aims to provide education, training and resources to enhance management of bodies corporate.[12]

Targeted education for retired people may be worth investigation if they form a high proportion of people volunteering for body corporate committees in New Zealand.

5.2.3 Guidance on maintenance requirements

Industry professionals can be commissioned to provide advice on maintenance requirements. Advice can be sought when new owners move in to MDH units, when owners are concerned about overdue maintenance or when the body corporate decides to undertake overdue maintenance. Many bodies corporate retain the services of an industry professional to undertake a proper evaluation of the building's maintenance requirements. As part of this work, they will produce a report of the current state of the building. They also assess the actions that will need to be undertaken over a 10-year period or over the life cycle of the building in order to maintain it properly.

MBIE has produced a template[13] as an example of how to provide the information required for a long-term maintenance plan. This include consideration of:

- repair and repainting and replacing parts of the building exterior
- providing access for work at heights such as scaffolding for work above 2 storeys
- maintaining external walkways and driveways

[12] See www.bccg.co.nz/home.html

[13] www.tenancy.govt.nz/assets/unit-titles/ltmp-body-corporates-complex.doc

- repainting and maintaining the basement, roof, stairwells, fixtures and fittings, and fences
- maintaining the landscaping
- electrical maintenance.

Information on average maintenance costs and levies by building type would help owners to identify significantly higher or lower costs and to ask the right questions of experts. Similarly, estimates of the level of long-term maintenance funds could be provided to owners. Easthope et al. (2009) recommended a system of benchmarks that related to particular building typologies. Such a system could enable regulation on a minimum level of levies to be set and funds held in the long-term maintenance fund.

5.3 Standardised disclosure documentation

Standardised disclosure documents could assist in the interpretation of information. This is especially critical for owners buying into new developments as their negotiations with the developer can avoid future maintenance problems for all owners.

Standard definitions of common property may also help avoid disputes about maintenance in MDH. For example, the New South Wales Government has adopted standard definitions for common property. A common property memorandum sets out the responsibilities for maintenance, repair and replacement of any part of the common property.

5.4 Improved planning horizons

Planning horizons are relevant from the design and construction stage through developer handover and throughout the life of the buildings.

5.4.1 Design and construction planning horizons

Designing for Maintenance (Pringle, 2015) notes that considering maintenance as part of the design stage may increase the initial construction cost but reduce the cost of the building over its lifetime. Materials and component selection are important, including consideration of the:

- relative importance of a component (for example, a bolt connecting a cladding panel on a high-rise building)
- presence of agents of deterioration (moisture, ultraviolet light, movement, contaminants)
- appropriateness of material for a location (for example, using a residential window detail on a high-rise apartment).

Pringle (2015) also notes that a systems approach, where one contractor is responsible for a system (such as building façades, roof systems or heating/ventilation/air conditioning) minimises the risk of incompatibility between components. Maintenance costs may also be lower when design and detailing incorporates durable materials, avoids paint finishes and provides for easy access for repairs. Consideration of access also includes thinking about the size and weight of components and whether they can be removed and replaced. Interior access includes considering ceiling height, corridor and doorway height and widths and floor finishes. Standard components may also reduce maintenance costs in the longer term as a small range of spares can be held and the process for repair is repeated. Finally, landscaping needs to be appropriate for

the buildings. Examples are ensuring trees are not planted in close proximity to the building and ground levels not built up against the sides of wall claddings.

5.4.2 Maintenance planning horizons

The Unit Titles Act requires a long-term maintenance plan with a time horizon of at least 10 years. Bodies corporate could implement planning to match the life cycle requirements of buildings, thus enabling costs to be spread over longer timeframes. Such planning should be condition-based or preventive-based as this is considered to be the most cost-effective approach although incurring significant set-up costs. Response-based maintenance (which has been prevalent in New Zealand) needs no foresight or planning but has the highest risk of incurring uncontrolled costs (Pringle, 2015).

5.5 Costs and funding

It will take time for the MDH sector to move from response-based or emergency maintenance to a planned approach. Preventive maintenance is likely to be the most popular option, as predictive and cyclical maintenance approaches do not align with the size of MDH developments. This will involve some significant costs to owners in the short term, especially if maintenance has already been deferred. However, further deferring maintenance is likely to result in higher costs of maintenance. Finally, better-informed purchasers may make lower offers for units where maintenance has been delayed or is not planned.

6. Conclusions and recommendations

The New Zealand experience of MDH is relatively new, although in the last two decades, residential intensification has increased and more MDH is being built. Most MDH is in New Zealand's cities. In 2017, more than 14,000 bodies corporate represent the owners of at least 60,000 units, many of which are MDH complexes.[14]

There are significant potential benefits to individuals, families, communities and cities as New Zealand continues to adopt more and more MDH as the housing typology of choice to both build and inhabit. While in some ways MDH is more convenient in terms of liveability, it can also be more challenging. This is because owners and occupiers live as part of a cooperative. This is not something some would have experienced before, and many do not understand what it means for them.

There are specific challenges in relation to maintaining MDH. They have been the focus of this research.

6.1 Maintenance

All dwellings need to be maintained. Some of that maintenance is regulated. For example, the BWOF mandates maintenance to particular standards for some structures.

BRANZ has focused on providing homeowners and builders, designers and specifiers with good information on maintenance, including how to design with maintenance in mind. This is because performance of buildings is affected by how it is maintained. There are a number of good-quality guides for maintaining stand-alone houses, but little in the way of specific guidance for maintaining MDH.

This is important because maintenance of MDH is more complex than it is for stand-alone housing. What makes MDH ownership more complicated for owners is the body corporate organisational structure that is required under the Unit Titles Act to run and operate MDH. Understanding and working with the body corporate can be challenging and/or difficult for some owners. In addition, access to units in MDH can be more difficult and maintenance requirements more stringent as they are regulated. A long-term maintenance plan must be prepared by the body corporate, and this involves forward thinking, planning and some specialist advice being sought.

That said, there are also some ways in which, for the unit owner, it is a simpler matter than it is for owners of stand-alone homes. This is because common areas are the responsibility of the body corporate. This is part of its appeal for some owners and occupiers.

Design and construction quality has a significant impact on maintenance and renewal requirements. The Building Act sets out the requirements for developers and the responsibilities of BCAs, including how long building elements must perform. In addition to meeting the requirements of the Building Act, some MDH requires an annual BWOF and compliance schedule.

Once MDH is in place, responsibility for maintenance transfers to the new owner(s). Where there are multiple new owners, the Unit Titles Act provides the legal framework for the ownership and management of the development. Unit owners are responsible

[14] https://www.national.org.nz/news/2016-05-30-report-on-improving-unit-titles-act-welcomed

for maintenance and repair of the interior of a unit, while the body corporate (comprising all owners) is responsible for the maintenance of common areas. While the responsibilities of the elected body corporate chair are laid out in legislation, the body corporate may hire a body corporate manager to arrange maintenance (amongst other duties).

Once the buildings are in place, each multi-unit dwelling will have unique maintenance requirements. Maintenance will be a continuous requirement throughout the life of the buildings, and plans can be essentially proactive or reactive. A long-term maintenance plan to cover maintenance of common areas is required under the Unit Titles Act, and this plan forms the basis for the levying of owners and on-going maintenance decisions. To support the long-term maintenance plan, a long-term maintenance fund should be established.

6.2 Challenges for maintaining and repairing MDH

A complicating factor for MDH maintenance is that higher-density housing (including MDH) is often associated with poor-quality construction, design and amenity. Furthermore, some MDH developments do not have a long-term maintenance plan in place or the plan is deficient. This can be attributed to:

- stakeholders having different incentives or motivations toward maintenance
- new owners having little knowledge of their rights and responsibilities
- the cost of emergency repairs, such as earthquake damage or strengthening or to address weathertightness issues.

Many stakeholders have influence in how much maintenance will be required or whether maintenance is actually carried out. The most important of these are:

- the developer
- the body corporate
- the body corporate manager
- unit owners.

The developer has a major influence on future maintenance as they set in place the contracts and arrangements for the maintenance of the building. However, it is not in the interests of the developer to clearly identify long-term maintenance requirements and associated levies as this will impact on the purchase price.

Body corporate managers also influence maintenance plans. At times, they may favour the developer's interests above the owners' interests. Body corporate managers can be required to work within tight budgets in a strongly competitive environment, and this puts pressure on their decision making.

Owners can be a diverse group with differing motivations and incentives. All owners are part of and some will be on the body corporate committee. Within this structure, some owners have a disproportionate ability to make or influence decisions. Often, owners' abilities or interest in raising funds for maintenance will strongly influence decisions made regarding maintenance.

While information is available on the Unit Titles Act and maintenance requirements of buildings, it is often not accessed by all who need it. Many people buying into MDH are doing so for the first time and may be unaware of their rights and obligations. Existing owners may also be confused about their responsibilities and those of the body

corporate in relation to maintenance. When long-term maintenance plans are prepared by people without appropriate qualifications or expertise, plans may not accurately describe maintenance requirements.

Funding maintenance can be a challenge, especially when costs are high. When no contingency has been set aside in a long-term maintenance fund, major emergency repairs can be difficult to fund. Earthquake-prone building repairs and leaky homes have proved expensive for those in MDH, and insurance premiums have increased significantly as a result.

Finally, planning horizons are short, with only 10 years specified in the Unit Titles Act. This can result in inadequate consideration of on-going maintenance costs, especially for long-life components such as roofs, cladding and joinery.

Also, costs associated with leaky building repair and earthquake remediation/strengthening have caught some unit owners by surprise. These issues have required significant investment for some MDH owners.

6.3 Discussion

If the value of MDH to New Zealand as a society is to be realised, the issues around MDH maintenance need to be addressed. Failure to do so will impact negatively on the value of our housing stock. It will mean New Zealanders are living in poorly maintained and potentially unhealthy conditions. It will also mean the MDH is a less attractive choice for many who need housing.

New Zealand needs MDH as an option for providing the homes we need both now and into the future. MDH can and has worked well in some places and at some times, both in New Zealand and to a greater extent internationally.

Making the simple changes outlined above would have a major impact.

6.4 Summary of recommendations

An analysis of the challenges with maintenance of MDH has identified a number of ways in which the situation could be improved and more timely and effective maintenance could be enabled.

Culture change

MDH maintenance and repair of common issues requires owners to understand their roles and responsibilities. This is not consistently the case currently. Bodies corporate represent owners' interests, and they are critical to decision making around maintenance and repairs for MDH. They must function better to meet the needs of all owners.

They could improve their performance and value by:

- ensuring they understand their role and responsibilities
- ensuring good communication is in place for all owners they represent
- seeking the expert advice needed
- ensuring their obligations for maintenance planning are met
- operating a transparent process for contractor selection to deliver maintenance.

This will require a culture change. Regulators may have an important role in educating bodies corporate.

Regulatory setting changes

There are a number of regulatory changes that are recommended for consideration. These would change incentives for stakeholders to invest in maintenance and repair.

There is potential for significant impact if body corporate levies were regulated to ensure they are consistent throughout the life of the building. In addition, requiring schedules for major and capital works would have an impact, as would a requirement for preparation of independent building life-cycle costing on completion of development of the MDH. If these were required to be provided to the body corporate, the body corporate would be in a position to make better decisions regarding maintenance of their MDH building.

Consideration might also be given to a building bond system that will cover defective work once a building is handed over by the developer. Improved clarity of the regulatory context would also be helpful.

Standard definitions and standard documentation to make it easier to interpret information and avoid disputes about maintenance need to be adopted.

Better guidance

There is inadequate guidance available for owners of MDH regarding maintenance and common repair issues. Provision of better guidance would have an impact by improving the knowledge of all parties involved in MDH. Primary areas for focus need to be:

- body corporate manager skills
- guidance on body corporate membership rights and responsibilities
- guidance on MDH maintenance requirements.

Improving skills and knowledge is an important area for focus. Where maintenance needs are better understood, maintenance is more likely to be undertaken. New body corporate members are an important target for improved education and guidance.

Improved planning horizons

This means planning for longer-term building maintenance at design and build stages. Consideration of full building life-cycle costs needs to be part of the long-term maintenance plan. The most significant change would be to move the MDH sector from response-based or emergency maintenance to a planned approach, ideally with at least a 10-year timeframe. However, in the short term, this is likely to result in higher costs to owners, especially if maintenance has been deferred. Whilst this may not be an attractive option for owners of MDH, costs and impacts of deferred maintenance need to be made clear.

Designing for easy maintenance

Reducing maintenance requirements for MDH in the long term has potential for significant impact.

Addressing deferred maintenance now

MDH owners need to understand clearly there is a penalty for deferred maintenance – higher maintenance costs along with lower purchase prices in a market where potential new owners are well informed. Addressing deferred maintenance will be costly, but it needs to happen. Government may need to consider support.

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