

Leveraging expertise to deliver medium-density housing

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Abstract

A number of stakeholders are involved in the delivery of medium-density housing (MDH) in New Zealand. This report identifies who of these stakeholders can be considered to be experts in the delivery of MDH and investigates how this expertise can be leveraged to benefit the wider building industry.

Keywords

Medium-density housing, MDH, experts, knowledge transfer, building industry.

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Executive summary

As the amount of medium-density housing (MDH) constructed in New Zealand has increased, so has the need to develop tools for the building industry to improve the quality and affordability of MDH. This report forms part of a BRANZ research programme entitled 'Medium-density housing that meets the needs of New Zealanders'. It contributes to the second success criterion aimed at ensuring that the building industry has the skills to design and build quality and affordable MDH.

The purpose of this report is to identify who the experts are in delivering MDH and how this expertise can be leveraged to benefit the wider industry. To this end, interviews with 34 industry stakeholders were undertaken, along with statistical analysis of building consent data and a literature review. The aim was to understand how MDH expertise has been leveraged to date and what opportunities exist to leverage such expertise in the future.

This research identified a lack of expertise amongst some stakeholder groups, with a need for better collaboration within the industry to deliver MDH projects. Given that the building industry is predominantly project based, it was found that expertise can be scattered between projects and participants and is seldom shared or reused if not captured and communicated (Cheng, 2009). The literature reviewed also highlighted the need for strong leadership to initiate, manage and promote ongoing knowledge transfer methods to improve MDH delivery in New Zealand.

There was general agreement among industry stakeholders that experts in MDH delivery in New Zealand did, in fact, exist. Conversely, a small number of stakeholders felt that there were currently no stand-out experts in the delivery of MDH. They felt it was a team effort with all stakeholders working together to ensure a quality outcome – not one stakeholder group alone.

Notwithstanding, experts in MDH in New Zealand were considered to include retirement village operators and social housing providers who act as both owner and developer. Some developers and group builders who have amassed significant intellectual property through the completion of multiple MDH projects were also included.

Common characteristics of experts were found to include:

- experience
- specialisation in MDH
- standardisation of MDH delivery processes
- the ability to work at scale
- advanced market knowledge
- those with ongoing learning processes
- understanding of the regulatory environment
- strong relationships across the industry
- a high level of preplanning of projects
- access to capital.

The most effective methods of leveraging this expertise and ensuring knowledge transfer were considered to include the following:

- Case studies focusing on the full delivery process (not just the design stage), covering a range of MDH typologies and construction methods and prioritising MDH projects that have been occupied for a period of time.
- Digital knowledge platforms creating a theme-based, cross-disciplinary learning portal as a one-stop shop for MDH information.
- Guidance from central government to provide consistency across the country, particularly regarding MDH building consent and construction requirements.
- Training and accreditation schemes – particularly for builders. This included a possible licensed large construction specialist scheme, expansion of the Licensed Building Practitioners Scheme to include a category for MDH and/or creation of a training levy.
- Professional development through industry organisations to increase learning opportunities regarding MDH and prioritise MDH through existing continuing professional development (CPD) schemes.

As mentioned above, strong leadership is required to initiate and implement these knowledge transfer initiatives. It was felt this leadership could be provided at a national level. It was also felt that greater use could be made of industry organisations to fulfil this role (for example, Registered Master Builders or the New Zealand Construction Industry Council).

Overall, there is a strong need for improved cooperation and collaboration across the industry. More specifically, it was considered that more information could be provided on means of financing MDH projects, this being a current barrier to MDH delivery identified by stakeholders.

This study therefore highlights the opportunities to leverage existing expertise in MDH delivery to improve the overall quality and affordability of MDH. This would be to the benefit of not only stakeholders in the building industry but the eventual owners and occupiers of MDH developments nationwide.

1. Introduction

Medium-density housing (MDH) is a growing building typology in New Zealand, accounting for 22% of new housing development in 2015, with a projected increase to 35% by 2025 (Page, 2017).

The popularity of MDH has increased as our cities and towns experience increased housing demand coupled with reduced land supply. MDH maximises land use by increasing density above that achieved by stand-alone dwellings, making more efficient use of available land and often leveraging co-location benefits with public transport hubs. It can be a more affordable housing option, given economies of scale at the construction stage. MDH also provides additional choice to New Zealand homeowners who may prefer a low-maintenance housing option closer to employment, healthcare, education or entertainment opportunities.

Given the rapid growth of MDH, BRANZ has embarked on an extensive research programme entitled 'Medium-density housing that meets the needs of New Zealanders' (see www.branz.co.nz/mdh). This aims to develop evidence-based tools for the building industry that can aid in the delivery of high-quality, affordable MDH across New Zealand (Bryson & Allen, 2017).

This current report forms part of the second stage of research aimed at ensuring that the building industry has the skills to design and build quality and affordable MDH. It recognises that several stakeholder groups are involved in the delivery of MDH, from owners to developers to builders and their local councils.

This report sets out to identify these stakeholders and define who among them can be considered as 'experts' in the delivery of MDH. It then suggests how best to leverage expert knowledge to enable cross-industry learning and upskilling and the eventual improvement of MDH quality and delivery nationwide.

1.1 Purpose

Specifically, the purpose of this report is to identify:

- who the experts are in delivering MDH projects across the country
- how this expertise can be leveraged to benefit the wider building industry.

It is anticipated that this knowledge can then be transferred to stakeholders in the MDH delivery process, resulting in the design and construction of higher-quality MDH. Ongoing learning and collaboration across all stakeholders will be a key element in improving the quality, affordability and longevity of MDH as a preferred building typology. This is particularly in our main centres or areas prioritising the efficient use of land for housing.

1.2 Definitions

BRANZ has defined MDH as multi-unit dwellings up to 6 storeys (Bryson & Allen, 2017). This includes attached 1-storey units, 1–2-storey duplexes or triplexes, 2–4-storey terraced houses and 3–6-storey apartment buildings but excludes stand-alone dwellings and high-rise apartment buildings.

A high-level literature review was undertaken to ascertain whether any definitions existed for 'experts' in delivering MDH. No such definition could be found. As outlined

in section 4.1, options for quantitative and qualitative definitions for experts were therefore considered.

For the purposes of this report, experts in delivering MDH in New Zealand are defined as those MDH stakeholders who possess one or more of the following characteristics:

- experience in MDH
- specialisation in MDH
- standardisation of MDH delivery processes
- ability to work at scale
- advanced market knowledge
- ongoing learning processes
- understanding of the regulatory environment
- strong relationships across the industry
- high level of preplanning of projects
- access to capital.

1.3 Research methodology

This BRANZ research is based primarily on semi-structured interviews with stakeholders involved in the delivery of MDH development. This was supported with a literature review to establish what work has been undertaken in documenting MDH knowledge to date and statistical analysis of building consent data to quantify stakeholder experience with MDH. These aspects are described in the following sections.

1.3.1 Literature review

A literature review was completed to understand:

- the current MDH delivery context
- what work has been undertaken to build MDH expertise to date
- the opportunities and challenges associated with knowledge transfer initiatives in the building industry.

With regard to the review of work undertaken to build MDH expertise, the available literature comprised mainly of MDH design guidelines and case studies published by local and central government. Beyond the design stage, very little literature was available and, in particular, there was a lack of literature regarding the MDH delivery stage (apart from general guides to navigating the resource and building consent processes).

Section 2 includes the findings of this literature review.

1.3.2 Statistical analysis

Building consent data was accessed through the Whats On dataset to identify the number of MDH units consented per stakeholder group over the 2-year period 2014–2016. This provided a crude measure of MDH experience in terms of volume, as there was no credible literature available that identified experts in MDH delivery nationwide.

Whats On is a comprehensive dataset of all building consents issued by territorial authorities in New Zealand, published by BCI New Zealand. The dataset includes information on the consenting council, builder, owner or developer, site location, building size and number of dwelling units. It does not, however, contain consistent



information on all MDH stakeholders. For example, only approximately 40% of building consents include information on the designer or architect, and no information on financiers and planners is provided at all.

The interpretation of Whats On data was aided by property ownership information, Companies Register records and promotional material for developments.

Section 3 includes the findings of this stakeholder identification.

1.3.3 Interviews

A total of 34 stakeholder interviews were conducted to inform this report. Interviews were undertaken with a selection of developers, financiers, owners, designers, planners, builders, councils and industry organisations involved in MDH delivery.

The interviews included a series of questions to gain an understanding of:

- the participant's experience in MDH delivery
- their opinion of the general ability of the building industry to deliver quality MDH
- their thoughts on who the experts in MDH were and how this knowledge could be leveraged to benefit the wider industry.

The findings of the stakeholder interviews are contained in sections 4 and 5.

Appendix A summarises issues raised in interviews with MDH stakeholders that fall outside of the research question. Appendix B includes the interview questionnaire, and Appendix C contains a summary of interviewee responses. Note that these responses have been anonymised to protect the privacy of interviewees.

2. Literature review

As identified in section 1.4.1, a literature review was completed to understand the current MDH delivery context, what work has been published to date and the opportunities and challenges associated with knowledge transfer initiatives in the building industry.

It builds on the extensive literature review undertaken in the BRANZ study report defining medium-density housing (MDH) (Bryson & Allen, 2017). This current literature review does not seek to repeat previous findings but rather targets specific aspects for review as relevant to the current study.

The findings of this literature review are summarised in the following subsections.

2.1 Building MDH expertise

In order to identify the experts in MDH delivery in New Zealand and how their knowledge can be leveraged to benefit the wider building industry, it is important to first understand what work has been undertaken to increase MDH expertise nationally.

Note that this review is limited to literature produced in relation to the New Zealand MDH development context only. International examples have not been included in this review as they do not pertain directly to the New Zealand MDH delivery environment (due, for example, to different regulatory settings and/or financing mechanisms).

The literature reviewed can be grouped into the following categories, based on the nature of stakeholder organisations.

2.1.1 Central government

Some central government agencies have been active in producing research, advice and guidance on MDH, given their urban planning and housing responsibilities. Literature from the Ministry for the Environment and the Ministry of Business, Innovation and Employment has been reviewed and is summarised below. These were the only two central government agencies found to have publically available MDH information.

Ministry for the Environment (MFE)

In 2011, MFE completed a project to define MDH and develop a set of MDH building typologies and an assessment methodology.

The MDH assessment methodology (Boffa Miskell, 2012) provided a robust urban design rating system to address perceived quality issues in the design of MDH nationwide. The assessment methodology was then tested via case studies that were considered to represent best-practice MDH from around the country at the time. Assessment criteria were grouped into the categories of:

- site context and layout
- building form and appearance
- street scene
- internal configurations.

Three case studies were evaluated using the MFE assessment methodology, including Stonefields in Auckland (Mein, 2012), The Altair in Wellington (Ferreira, 2012) and

Chester Courts in Christchurch (Church, 2012). These projects scored between 79 and 83 out of a maximum possible score of 100.

Lessons learned from the case studies included:

- sole ownership of multiple titles facilitates more comprehensive design and easier implementation
- agreement of a masterplan between council and the developer at the start of a project made for a streamlined development and consenting process
- affordable land purchase prices and council development contributions can contribute to higher-quality and more affordable MDH
- contextual and site analyses should be undertaken at the initial design phase to better inform opportunities and constraints in the development of sites for MDH.

The MFE MDH project was intended as a learning resource to increase expertise within the wider MDH development community, including consent authorities (councils).

Ministry of Business, Innovation and Employment (MBIE)

The former Department of Building and Housing (now incorporated within MBIE) commissioned a report regarding case studies of intensive urban residential development projects (Boffa Miskell, 2009). This report incorporated an assessment of 10 case studies, including details of the development process of each.

Lessons learned from the case studies included the following:

Financing

- There is a lack of funding mechanisms in place to facilitate growth.
- There is too much uncertainty for developers and financiers to undertake large-scale, long-term MDH projects, which have complex issues to manage and resolve on an ongoing basis.
- MDH development timeframes are too long to ensure a return, providing a disincentive to developers.
- The timing and burden of council financial contributions (especially for infrastructure) usually imposed as conditions of resource consent can be a disincentive to developing MDH.

Capability

- There are not enough practitioners (designers, planners, builders) promoting or understanding large-scale MDH development.
- A partnership approach with councils is critical (including the provision of timely, accurate information from councils).
- Inflexibility of councils and financiers to 'think outside the square' make it very difficult for developers to deliver MDH.

Land management

- Amalgamation of land in different ownership is extremely difficult.
- Councils need to adopt a long-term, integrated approach to infrastructure provision (as opposed to a short-term piecemeal approach).

This former Department of Building and Housing report (Boffa Miskell, 2009) was not primarily aimed at increasing expertise in the building industry. Rather, it was used to inform a report to Cabinet and private sector-led taskforce in operation at the time.

Notwithstanding, it contains a wealth of information directly relevant to the building industry and is one of the only sources of information found regarding the actual development process for MDH (from financing to marketing).

2.1.2 Local government

Many local councils throughout the country, particularly in urban areas, publish MDH design guidelines and case studies. These are intended to provide advice and guidance to developers, architects, urban designers, engineers and planners when designing MDH developments. Design guidelines are also used by planners and other council staff when assessing resource consent applications for MDH or when considering changes to district and/or city plans.

A selection of local government MDH publications are summarised below.

Auckland Council

Auckland Council provides extensive design guidance for MDH through the Auckland Design Manual and Auckland Urban Design Panel. This includes a range of MDH case studies as well as tools such as build process checklists.

In addition, Auckland Mayor Phil Goff established a Housing Taskforce primarily focused on housing supply. It has a mandate to identify barriers and constraints to building more homes in Auckland, alongside options and recommendations to overcome these.

To this end, a Mayoral Housing Taskforce Report was published in June 2017 (Nunns, 2017). This outlined key recommendations in three key areas, including building through the dips, unlocking development opportunities and enabling efficiency and innovation in consenting and risk management.

Within the third key area (enabling efficiency and innovation in consenting and risk management), three recommendations were made regarding MDH:

- Develop new Acceptable Solutions under the Building Code for prefabricated products and MDH typologies that are not well addressed by existing Acceptable Solutions and are important for meeting Auckland's future housing needs.
- Improve certainty and confidence in medium-density and higher-density housing for buyers, through changes to the Unit Titles Act.¹
- Review the Building Code and update it to ensure that it reflects and enables ongoing innovation, especially in prefabricated products and MDH typologies. MDH faces special issues, such as managing noise through common walls, which are not well addressed by the existing Building Code and are important for meeting Auckland's future housing needs.

Auckland Council intends to invite a response on these recommendations from MBIE, in consultation with councils and developers. It is therefore looking beyond typical local government interventions regarding MDH (such as the publication of design guidelines)

¹ MBIE is currently reviewing the Unit Titles Act 2010 to ensure that it is functioning well and is fit for purpose. This includes various reform proposals regarding long-term maintenance planning and strengthening the governance structures and professionalism of bodies corporate (MBIE, 2017).

and seeking to address the systemic issues associated with the delivery of MDH in New Zealand.

The Auckland Council MDH-related literature reviewed has a wide audience. This is both nationally (for example, MBIE in relation to legislative changes required to encourage and enable MDH) and locally (for example, to increase expertise within the MDH development community, including design guidelines for architects).

Wellington City Council (WCC)

In Wellington, WCC identifies MDH as beneficial in terms of providing housing choice and a compact form of development near town centres as well as increasing housing affordability. WCC provides multiple case studies of MDH including in Karori, Tawa and Newtown (Wellington City Council, n.d.).

Within the District Plan, WCC provides for MDH by way of specific zoning – the Medium Density Residential Area (MDRA). This provides a clear indication of where WCC considers MDH to be best located. MDH development proposals are then provided for as permitted activities (meaning that no resource consent is required) within the MDRA, provided that they comply with specified conditions, including maximum height and so on.

Should resource consent be required for MDH, WCC assess such consents against its residential design guide.² The design guide includes specific guidance and requirements for development within the residential zones, looking at character, site planning, building design and open space design. Interestingly, the design guide provides for existing character as less of a focus in identified MDH areas, as it is recognised that MDH will establish a new, more intensive urban character. The purpose of the design guide is to assist designers in producing attractive MDH developments in accordance with council expectations.

The provision for MDH in the Wellington District Plan sends a clear signal to developers that MDH is considered an appropriate form of development within certain parts of the city. This provides a level of certainty and reduction in development risk. The residential design guide provides similar certainty to designers in terms of what form of MDH is likely to meet with council approval. By clearly expressing such parameters, WCC effectively encourages MDH in what it considers to be appropriate form and location.

2.1.3 Other agencies

Literature particularly regarding best practice in MDH development is also produced by agencies outside of central and local government, including Crown agencies, independent research institutes and academia. Publications from two such agencies (being the most prolific in terms of MDH information available) have been reviewed and are summarised below.

Housing New Zealand Corporation (HNZC)

In September 2004, HNZC (being a Crown agent providing housing services for people in need) produced a report on best practice in MDH design (Turner, Hewitt, Wagner, Su & Davies, 2004). This report identified the characteristics and potential of MDH as a

² See <https://wellington.govt.nz/~media/your-council/plans-policies-and-bylaws/district-plan/volume02/files/v2residential.pdf?la=en> – last amended 19 November 2014.

typology suitable for affordable urban development in the New Zealand context. It undertook an international and locally focussed literature review, provided a definition of MDH in New Zealand and provided several detailed case studies of MDH.

The findings of the HNZC report were design based, related to one of four principal layout types, and covered aspects such as density and vehicle parking. It appears to be intended as a learning resource to increase both expertise within HNZC and the quality of HNZC MDH developments.

Beacon Pathway

Beacon Pathway is an incorporated society with the objective of making New Zealand's homes and neighbourhoods high performing, adaptable, resilient and affordable.

In July 2015, Beacon Pathway undertook a study tour to North America (Vancouver, Seattle and Portland) to experience successful MDH developments in suburban and inner city settings.

These are four key findings from the study tour (Beacon Pathway, 2015):

- Successful MDH was at times the result of one-off development opportunities – for example, redevelopment of brownfield industrial parks or other underutilised land. Opportunities should therefore be capitalised on as appropriate land becomes available.
- Diversity is key when exploring ways of using various housing options to intensify existing neighbourhoods. This could include houses on separate titles but with shared communal spaces (for example, pocket parks and playgrounds).
- All three cities focused on affordable rental housing as opposed to affordable home ownership. To achieve this, different ownership structures can be used to enable a greater variety of housing tenure and choice – including longer and more secure rental tenure.
- There are large-scale benefits to be achieved from co-locating MDH and public transport hubs, enabling MDH residents to be less vehicle dependent and freeing up land previously required for car parking.

The Beacon Pathway MDH study tour was primarily a learning initiative, including participants from local and central government, development companies and the architecture, health and education sectors. It intended to increase expertise first hand within these organisations.

2.1.4 What are the gaps?

With some exceptions, most of literature available for review comprised design guidance for and case studies of MDH in New Zealand.

There is no doubt that design guidance and case studies are useful for MDH development professionals (particularly architects, urban designers and planners). However, it would be advantageous for information regarding other stages of the MDH delivery process to be as readily available. This includes:

- the development initiation stage – securing finance and determining project feasibility
- the construction stage – providing MDH-specific building and product information and site management solutions

- options for tenure – outlining scenarios, for example, for long-term rental versus outright ownership or what's involved with unit titles
- partnership approaches for the delivery of MDH – including relationship building with councils, iwi and other industry stakeholders.

There is a need to think outside the square and communicate across workstreams and between disciplines to improve MDH delivery expertise in New Zealand. To ensure this, the above gaps in available MDH literature could be addressed to ensure that maximum knowledge transfer across the industry can occur. The current BRANZ MDH research programme goes some way towards achieving this (through the provision of information regarding the construction stage in particular. However, opportunities remain to increase the scale and reach of MDH delivery advice nationwide and thereby increase MDH delivery expertise.

2.2 Leveraging expertise

This section of the literature review identifies issues and opportunities associated with leveraging expertise or knowledge transfer to benefit the building industry. This informs section 5, which discusses specific methods to leverage MDH expertise in the New Zealand context.

2.2.1 Nature of the building industry

It is useful to understand the nature of the building industry and the type of information that pertains to it before considering how best to leverage expertise or transfer knowledge to improve MDH outcomes.

In New Zealand and abroad, the building industry is predominantly project based with knowledge and expertise scattered between projects and participants. This means that knowledge will seldom be shared or reused if it is not documented accurately and transferred effectively (Cheng, 2009). This pattern of behaviour can be exacerbated by the commonly competitive relationships and conflicting goals of project participants in the construction sector (Bellini, Aarseth & Hosseini, 2016).

It was also identified that the delivery of information to those at the construction site can be poor and that effective methods of transferring knowledge between parties involved in construction are lacking (Zaidi & Davies, 2011).

In New Zealand, some MDH knowledge is documented and shared, such as the case studies discussed in the preceding section. Notwithstanding, such knowledge tends to be profession-based (urban design or planning) rather than theme-based (MDH) and does not cover the full spectrum of the MDH delivery process. This reinforces the need for better integration of information to ensure that the benefits of knowledge transfer can be realised at all stages of MDH delivery.

2.2.2 Benefits of knowledge transfer

Knowledge transfer or leveraging expertise has a number of benefits for the building industry. This includes the achievement of successful project outcomes (Bellini, Aarseth & Hosseini, 2016), quality outputs making best use of resources and maximisation of project goals and building performance (Zaidi & Davies, 2011).

Conversely, a lack of knowledge transfer can lead to low-quality outputs and poor building performance (Jergeas & Van der Put, 2001). Factors such as low quality and poor building performance can be a disincentive for owners and tenants in choosing

MDH, potentially compromising its uptake as a preferred building typology in New Zealand urban areas.

2.2.3 Types of knowledge

Goh (2002) identifies that the type of knowledge is a critical factor in deciding on the process needed to facilitate knowledge transfer. Most knowledge experts agree that there are two specific types of knowledge (Havens & Knapp, 1999).

This includes firstly tacit knowledge, which is generally personal information and based on experience. As such, tacit knowledge can be hard to formalise or document. The best transfer methods for this type of knowledge include via interpersonal means, such as mentoring (Goh, 2002).

The second type is explicit knowledge, which is more precise and unambiguous. Explicit knowledge can be transferred through technology-driven, structured processes such as digital platforms (Goh, 2002).

Both types of knowledge are relevant to the MDH delivery process in New Zealand. In this context, tacit knowledge may include such things as design preferences and relationships with subcontractors, which is knowledge gained through experience. Explicit knowledge in MDH may include such things as building requirements – for example, regarding fire and acoustic treatment.

It is relevant to keep in mind these different types of information when considering options for leveraging MDH expertise, as discussed in section 5.

2.2.4 Requirements for successful knowledge transfer

Various factors have been identified in literature as being key requirements for the successful transfer of knowledge. These include management or leadership, collaboration and the presence of appropriate support infrastructure.

Optimal knowledge transfer requires visible and participative management involvement. Management support is the core of a knowledge-sharing culture that fosters open communication and respectful relationships (McNichols, 2010). In the MDH context, management support also encompasses the need for leadership. Clear leadership will be required to initiate, manage and promote ongoing knowledge transfer methods to improve MDH delivery in New Zealand.

Cooperation and collaboration is also critical to knowledge transfer. Without a willingness to work together and share information, expertise is not able to be effectively leveraged (Goh, 2002). Barriers to collaboration do exist however, that can make collaboration problematic. This includes commercial sensitivity, where MDH delivery information can be the intellectual property of private firms, making them less likely to share such information when others could use it for commercial advantage.

Another important factor in knowledge transfer is the existence of infrastructure to reinforce and support it (Goh, 2002). Such infrastructure may include digital platforms for information sharing, monitoring and reporting programmes and oversight and support tasks associated with leveraging initiatives. Knowledge sharing mechanisms typically require ongoing resourcing and are unlikely to succeed without the infrastructure to support them.

It will be important to keep these requirements for successful knowledge transfer in mind as section 5 considers specific methods for leveraging MDH expertise.

2.2.5 Digital knowledge transfer in action

Following on from knowledge transfer theory, it is useful to consider a practical example of knowledge transfer in action.

The recent World Economic Forum (WEF) Future of Construction project is a global initiative aimed at supporting the transformation of the engineering and construction sector to improve productivity and efficiency. It was the genesis of the Industry Transformation Agenda (ITA) in New Zealand, initiated by BRANZ in 2017 as a framework to bring about ambitious and meaningful change to New Zealand's building and construction sector (see <https://futureconstruction.nz/about.html>).

As part of the Future of Construction project, the WEF identified a key issue to industry transformation as being insufficient knowledge transfer, particularly regarding construction process. It was identified that, although construction projects have their own unique characteristics, the process of construction is repeated from project to project, yet few companies have institutionalised such a process (World Economic Forum, 2016).

To address this lack of knowledge transfer, the WEF:

- created a knowledge sharing platform to exchange best practices and ideas regarding the infrastructure and urban development industry (see <https://futureofconstruction.org/>)
- released a report that uses case studies and lessons learned to leverage knowledge (how to inspire innovators) in the construction industry (World Economic Forum, 2017).

The two methods of knowledge transfer used by the WEF (digital knowledge sharing and case studies) are discussed further in section 5 as applicable to the MDH delivery context in New Zealand.

2.3 Summary

The following key messages can be taken from the literature review undertaken in this section.

Building MDH expertise

- A lack of capability (expertise) was identified amongst some stakeholder groups (including council staff and development project managers) (Boffa Miskell, 2009).
- Developers appear to be the only industry participants active in all stages of the MDH delivery process from project inception to initiation, financing, design, consenting, construction and delivery of MDH to market.
- Clear provision for MDH in district and city plans (zoning and rules) can provide certainty to developers and designers and reduce risks associated with development.
- Further research could be beneficial regarding financial contributions currently being charged by councils across the country for MDH, to assess the scale of financial contributions as a potential barrier to MDH development and quality.
- There is a need for integrated expertise (from local government to the building industry) to deliver MDH projects.



- Collaboration is the key to success, including collaboration between disciplines and stakeholders (Scrafton & Bredemeijer, 2013).
- Further information and learning materials are required for beyond just the design stage of the MDH delivery process, including for the initiation and construction stages. This would enhance expertise across the full spectrum of the MDH delivery process.

Leveraging expertise

- The building industry is predominantly project based with knowledge and expertise scattered between projects and participants. Knowledge will seldom be shared or reused if it is not documented accurately and transferred effectively.
- A lack of knowledge transfer can lead to low-quality outputs and poor building performance.
- Clear leadership will be required to initiate, manage and promote ongoing knowledge transfer methods to improve MDH delivery in New Zealand.
- Cooperation and collaboration is critical to knowledge transfer, although issues such as commercial sensitivity can create barriers to information sharing.

3. MDH stakeholders

A large number of stakeholders are active in the medium-density housing (MDH) delivery process in New Zealand. This section identifies these stakeholders and outlines the role they play in the initiation, design and planning, construction and regulation of MDH.

For the purposes of this report, only professional stakeholders have been included. Additional stakeholders such as community groups and iwi are not covered in the research as data regarding the input of these groups is not readily available. In addition, such groups may have the opportunity be involved in MDH design and delivery through regulatory processes such as resource consents. This can involve community consultation (for larger projects) and discussion with any parties who may be deemed to be potentially affected by an MDH proposal.

3.1 Identifying stakeholders

Stakeholders in the MDH delivery process in New Zealand and the roles that they play are identified in the following subsections. Information was obtained via a literature review, statistical analysis and stakeholder interviews (refer to Appendix C for anonymised summaries of interviews).

3.1.1 Developers

Most MDH work is initiated by developers. This includes organisations such as Housing New Zealand Corporation (HNZC) – the major social housing provider in New Zealand – and large-scale retirement village operators. Other developers include those delivering one-off apartment buildings and small-scale builders delivering terraced housing or flats.

Developers are a key group in the delivery of MDH. Their mode of operation is entrepreneurial, meaning that developers seek to make a profit in recognition of the financial risks involved in bringing a development to market. Developers focus on several roles including

- understanding different buyer needs and their price ranges
- current and future demand and supply of MDH
- awareness of planning rules in some detail
- maintaining ongoing relationships with financiers, designers and builders.

Context

Developers come in a variety of sizes as shown in Table 1. Many of the larger public and private developers are both land owner and developer, including most of the social housing providers.

Table 1 indicates that, over the 2-year study period, those developing more than 50 units were only 5% of all developers but they produced 33% of all new MDH units consented. The other 67% of units were initiated by 95% of all developers, at an average size of 10 units per developer. The bottom group (1–10 units per developer) accounted for a sizeable amount of MDH work at 21%, and the opportunity is for them to scale up, having already undertaken some MDH projects.

Table 1. Size of developer groups by number of units.

MDH public and private developer size by work percentage					
Dwelling units consented in the 2 years ending December 2016					
Number of units by developer	Number of developers	% all developers	Total units	% all units	Average units per developer
>100	14	2%	2,501	19%	179
51–100	23	3%	1,866	14%	81
31–50	47	5%	1,820	14%	39
21–30	46	5%	1,198	9%	26
11–20	191	22%	2,745	21%	14
2–10	534	62%	2,771	21%	5.2
Total	854	100%	12,899	100%	15

Source: Whats On dataset.

Identification of private sector developers is shown in Table 2. The number of developers with over 100 units in Table 2 is a subset of the numbers shown in Table 1 (the remainder being social housing providers).

The developers in the table are larger organisations, which provided about 22% of all MDH over the 2-year period ending December 2016. Most of these developments are single location projects that are approved either in one consent or as staged consents. Many companies exist only for the duration of the project to compartmentalise legal and financial responsibilities. It is not known how many of the promoters of these developments have previously completed other MDH projects, though it is likely that some have.

Other developers retain their legal identity from project to project, and these are generally among the higher-profile development companies. They include Willis Bond, Ockham Residential and Southpark Corporation.

Often housing development is headed by the main contractor who has undertaken the role of arranging finance and sales on completion. Examples of these in the table include Hamilton Residential and Horncastle Homes. Many smaller MDH projects, not shown in Table 2, are in this category.

Table 2. Private sector developers building MDH.

Major developers providing MDH units for sale				
Dwelling units consented in the 2 years ending December 2016				
Developer or owner	Number of units	Number of consents	Average units/consent	Location
Willis Bond & Co.	473	5	95	Auckland CBD and Hobsonville
Miro Apartments (XCJ Group NZ Ltd)	195	1	195	Eden Terrace
Kensington Park (Southpark Corp)	140	5	28	Orewa
Library Lane Dev (Kvest Investment)	130	1	130	Orewa

Major developers providing MDH units for sale				
Dwelling units consented in the 2 years ending December 2016				
Developer or owner	Number of units	Number of consents	Average units/consent	Location
Alexandra Park (Auckland Trotting Club Incorporated)	128	1	128	Epsom
Thompson Park Holdings (liquidated)	107	1	107	Mt Wellington
The Pines 2014 Ltd	104	2	52	Browns Bay
Hermitage Homes	96	2	48	Epsom
CDL Land NZ Ltd	94	1	94	Christchurch
Avanda Ltd	93	5	19	New Lynn
Auburn Development Ltd	92	1	92	Takapuna
Neil Group	87	5	17	Grafton
Hamilton Res Ltd	82	20	4	Hamilton
Todd Property Group/ Fletcher Residential	80	1	80	Stonefields
Thomas & Adamson Ltd	72	9	8	Flat Bush
SMVG Development Ltd	66	2	33	Christchurch
Pacific Coast Village Partnership	62	11	6	Tauranga
Total	2,101	73	29	

Source: Whats On dataset.

3.1.2 Financiers

Financiers provide funding for MDH projects and are an essential element in the delivery of buildings that have significant cash demands before completion and sale to end users. Financiers are primarily interested in making a profit, and to this end, they undertake a risk analysis of the project to assess the security of their investment.

Typically, developers identify a new housing project for a specific site and develop a proposal for funding by banks or other financiers. There is a close relationship between developers and financiers, and sometimes they are the same company undertaking both roles. Social housing providers generally have their own funding arrangements either from internal sources or from shareholders.

The costs associated with delivering MDH can vary considerably depending on typology, location and target market. MBIE and MFE (2017) provide indicative costs for purchasing and developing a hypothetical 800 m² development site in a mixed suburban housing zone in Auckland. Costs range from \$1.9 million for two detached houses to \$3.4 million for six terraced houses and up to \$15 million for a 4–7-storey apartment building containing 30 units. Although revenue is also greater in higher-density developments, this illustrates the challenge of funding higher-density MDH typologies.

Context

Before the global financial crisis (GFC) of 2007/08, finance companies were a major source of funding for developers and were largely funded by the public. As the property market started to decline in the mid-2000s, investors withdrew their money where possible, and finance companies often had to exit their investments at a loss. Some directors also lacked experience in property development and made high-risk loans on projects that were not viable. This has reduced the number of these finance companies operating in New Zealand, and the majority are now internally funded.

Before the GFC and even more so now, most funding of MDH is from the trading banks. However, changes to the Australian banking regulations in late 2016 required them to have more reserves in Australia. This has caused an outflow of reserves from their New Zealand operations, leading to less funds being available for local investment. Local finance companies then had limited capacity to take up the gap in supply.

The trading banks have loan guidelines that may include a minimum amount of developer's equity and level of presales. Smaller financiers tend to rely more on personal knowledge and contacts, including previous dealings with the developer.

At present, the trading banks typically require close to 100% presales before they are prepared to fund new multi-unit developments. Even then, they fund only about 80% of a development. The remaining funds come from the developer's equity, with any shortfall made up with second mortgage funding from smaller financiers or merchant banks. Such organisations tend to be funded by groups of high-net-worth individuals rather than by the public. Second mortgage funding typically ranges between \$1 million and \$30 million and can be referred to as second-tier or mezzanine funding.

A further variation on the traditional first and second mortgage development funding approach is hybrid debt. The developer effectively borrows the first and second mortgage from a single lender, typically a merchant bank. The lender will take an equity interest in the development to earn a share of any profits, with both debt and equity interests, hence the term hybrid debt. This tends to be more expensive than a first mortgage through a trading bank. However, it confers benefits of only one lender to deal with, one set of legal documents and one due diligence process. This leads to a faster and easier process, which may contribute to a lower total cost than two mortgages. This requires the lender to be highly satisfied with the development proposition, which usually means:

- with a developer they have worked with before
- resource consents already approved
- consultants and contractors secured
- some presales completed to confirm market acceptance.

Some financiers have assisted novice developers on small projects (\$1–3 million) by using the financier's expertise and advice. Their aim is to enable these borrowers to grow and undertake larger projects in the future.

There are very few public finance companies involved in the process compared to the numbers existing in the early 2000s. Most non-bank financiers are privately funded. The larger ones include Reesby & Co Ltd (lending per project \$0.5–20 million), NZ Mortgage and Securities (up to \$30 million), McDougall Reidy & Co (up to \$30 million) and Capital Group (up to \$20 million). Willis Bond is also a financier as well as

developer, with over \$200 million currently invested in new projects. Non-bank financiers may also obtain their funds from the public and government institutions such as ACC, NZ Superannuation Fund and Government Superannuation Fund.

A less common development finance method is land bank finance. This is utilised when the developer cannot demonstrate their ability to service the debt but the development has a high intrinsic value due to land scarcity. In these cases, the lender often uses a specialised knowledge of land supply issues to assess the loan application.

3.1.3 Owners

MDH owners come in two main forms – social housing providers and individuals. Social housing providers typically commission and either sell or rent out MDH for sectors of the community that are not able to afford to buy their own housing. These include HNZA and local government housing providers. The other main type of social housing provider is retirement village operators who lease out units to individuals with a variety of right-to-occupy terms. These owners have a large role in financing and designing their MDH developments.

The other type of owner is individuals who purchase MDH from developers. They are either owner-occupiers or they may purchase units as an investment and rent them out in the private sector. Depending on the type of development, this type of MDH unit may be freehold or have unit titles and a body corporate structure.

Context

Owners' involvement in the design and production of MDH varies from nil to comprehensive. Usually MDH units are sold individually to owner-occupiers or to investors who have no direct input into the design of the project. However, large housing property owners such as councils, aged-care organisations and HNZA commission new MDH. Their brief has a large influence on the quality of new MDH and its impact on the local community.

HNZA was one of the first organisations to consider what good MDH should look like, beginning with 2–3-storey apartments and terraced housing. HNZA has experience in a variety of multi-unit forms and has design guides for internal staff use, which are unpublished.

HNZA MDH development has also influenced the private sector. For example, at Tamaki and Hobsonville in Auckland, government-established corporations are redeveloping new housing with a mix of social rental housing, private housing and affordable housing. Most of these are MDH, and the process has involved consultation with the local community. The results are a variety of design styles and building forms, produced at quite a large scale involving several streets at any one time. Outside Auckland, other major councils are undertaking similar redevelopments of their rental stock, though on a smaller scale.

Social housing providers typically have a strong community focus in the design of MDH and good feedback loops once developments have been tenanted (through mechanisms such as post-occupancy surveys). This assists in the ongoing improvement of design to meet the needs of end users.

Private MDH developments are generally targeted at owner-occupiers, individual investors and social/aged care companies. The owner-occupier type of MDH provides

for a variety of lifestage households (Bryson & Allen, 2017) including young professionals, young families, single persons and empty nesters.

Many private owners are first-time buyers of MDH, with uncertainty in the trade-offs involved between household income and the quality of the dwelling unit. There are body corporate and unit title issues that are unique to apartments, such as maintenance (Duncan & Page, 2017). Organisations such as the Home Owners and Buyers Association of New Zealand (HOBANZ) offers expertise to assist private owners on these issues.

Table 3 illustrates social housing sector involvement in new MDH over the 2-year study period. Retirement village companies are included as well as central and local government-funded housing. These owners built about 20% of all new MDH over the 2-year period. The major owners of new stock are HNZC and the retirement village/apartment owners, namely Summerset, Ryman, Bupa and Metlifecare, which are nationwide organisations.

Table 3. Social sector owners building rental MDH.

Major owners providing social rental MDH					
Dwelling units consented in the 2 years ending December 2016					
Owner	Number of units	Number of consents	Average units/consent	Sector	Location
Housing NZ Ltd	568	92	6	G	Auckland, others
Summerset Villages	504	40	13	P	Auckland, others
Ryman Villages	402	66	6	P	Auckland, others
Bupa NZ Ltd	167	7	24	C	Various
MBIE	116	10	12	G	Christchurch
Oceania Retirement Group	109	5	22	P	Taupo
Ngai Tahu Property Ltd	104	16	7	C	Christchurch
The Ranfurly Trust Board	98	3	33	C	Three Kings
Wellington City Council	92	9	10	G	Wellington
Masonic Trusts	64	4	16	C	New Plymouth
St Martins Green Ltd	56	2	28	P	Christchurch
Whangarei Falls Village Ltd	54	2	27	P	Whangarei
Metlifecare Villages	48	2	24	P	Various
Christchurch City Council	38	4	10	G	Christchurch
Cambridge Resthaven	34	11	3	C	Cambridge
Golden Age Retirement Villages Ltd	34	1	34	P	Christchurch
Total	2,488	274	9		

Source: Whats On dataset.

Sector: C = community, P = private, G = central or local government.

3.1.4 Designers

Designers (including architects, urban designers and engineers) provide expertise across a range of MDH typologies, from low-cost basic units to high-cost enhanced-quality apartments. They design MDH developments and ensure compliance with local planning and building requirements. Such requirements can include the health and safety aspects of buildings and may involve specialists such as structural, acoustic and façade engineers.

At the lower-cost end, the design needs to be readily buildable with minimal aesthetic defects and in accordance with the Building Code. Beyond this, good designers will incorporate privacy, communal spaces, low maintenance, safe and secure access and energy-efficient building performance while achieving an overall pleasing aesthetic design desirable to the market.

Context

Registered architects tend to design larger, high-cost MDH projects, while architectural designers generally undertake smaller projects. However, there is significant overlap between the two groups, particularly on small to medium-sized projects (up to 20 units per project).

Table 4 shows the number of firms by size involved in MDH design. The top two groups design 26% of all units but account for only 4% of all MDH designers. There are approximately 3,000 architectural design firms³ in New Zealand, and the average size is 2.9 persons including the proprietors. Table 4 estimates that about 800 of these have completed some MDH work over the 2-year period, but the majority have completed only small projects at an average of six units per project.

Table 4. Size of designers by building consent units.

MDH designers by work percentage					
Dwelling units consented in the 2 years ending December 2016					
Number of units by designer	Number of designers	% all designers	Total units	% all units	Average units per designer
>100	14	2%	2,385	18%	170
51–100	14	2%	1,063	8%	76
31–50	30	4%	1,281	10%	43
21–30	99	12%	2,671	21%	27
11–20	155	19%	2,639	20%	17
2–10	501	62%	2,856	22%	6
Total	813	100%	12,895	100%	16

Source: Whats On dataset.

Further to this, Table 5 identifies the major MDH design firms, although it should be noted that this is based on incomplete data as the Whats On dataset only identifies the designer for approximately 40% of consents. These are a mixture of registered architects and architectural designers. In deriving the information contained in Table 5, the Whats On data has therefore been scaled up in the smaller sized groups to get the total number of MDH units, estimated at 12,895 for the 2-year study period.

³ Business Demography Statistics, Statistics NZ.

Table 5. Major designers of MDH.

Major designers of MDH Dwelling units consented in the 2 years ending December 2016				
Designer	Number of units	Number of consents	Average units/consent	Location
Architectus Auckland	403	3	134	Auckland
Foley Group Architects	303	10	30	Christchurch
Ignite Architects Ltd	179	4	45	Auckland
Brown Day Group Ltd	136	2	68	Auckland
RTA Studio Ltd	128	1	128	Auckland
Novak & Middleton Architects	120	12	10	Wellington
Diverse Design Ltd	116	18	6	Hamilton
ETO Architecture Ltd	116	3	39	Kaipoi
Leuschke Group Ltd	110	3	37	Auckland
Design Base	103	8	13	Nelson
ASC Architects	98	3	33	Auckland
Gravity Design Ltd	82	14	6	Christchurch
Chow Hill Architects	77	3	26	Auckland
Archistudio Ltd	73	3	24	Devonport
Ashton Mitchell Architects	73	5	15	Auckland
Byrne + Enright Architecture	71	14	5	Hamilton
Total	2,188	106	20	

Source: Whats On dataset.

3.1.5 Planners

Planning consultants are typically engaged by developers for larger MDH projects at the initial project concept and feasibility stage. They can provide information regarding the potential development capacity of a site against what is feasible under the relevant planning rules. Planners also usually prepare any resource consent applications or plan changes required for MDH development and steer these through the relevant council processes.

Council planners provide for MDH through local district or city plans. In larger urban areas, district or city plans can include zones for MDH development in locations that lend themselves to higher-density development – for example, in proximity to transport hubs or employment areas. A number of councils also prepare design guidelines for MDH, which identify the form and type of MDH preferred by the council. Such guidance may include façade treatment, parking, building performance and requirements for public and private open space. The compliance of MDH developments against such design guidelines may be assessed as part of the resource consent process.

Typically, the resource consent process is smoother if MDH is provided for in a district or city plan by way of zoning or favourable density rules (Duncan & Brunson, 2017). Resource consents for MDH out of zone (for example, in lower-density areas or within areas that do not have favourable density rules) can be harder and take longer to obtain approval – sometimes requiring the approval of neighbours.

The Whats On dataset does not include information regarding planners involved in MDH projects, as this dataset is based on building consent data. Planners are generally part of the resource consent process for MDH but not the building consent process.

3.1.6 Builders

Builders undertake MDH construction based on the plans and specifications received from the designer and as approved by the council. Builders tend to specialise by the size and height of the project. Competitive tenders are the most common contractual arrangement, although minimising cost can be less important to developers than assurance of quality.

In the latter case, the developer may engage a builder they have previously worked with, using agreed rates for different types of work. Other forms of contract include design and build and early contractor involvement. Both involve close collaboration between designers and builders to achieve efficiencies in time and materials.

Context

Table 6 shows the number of building firms involved in MDH construction by size. The largest group (>100 units in the period) account for 17% of all MDH units, and the top three groups account for 46% of all units. The bottom group (2–10 units over the period) accounted for a sizeable amount of MDH work (19%) and the opportunity is for them to scale up, having already undertaken some MDH projects.

Table 6. Size of building firms by building consent units.

MDH builders by work percentage					
Dwelling units consented in the 2 years ending December 2016					
Number of units by builder	Number of builders	% all builders	Total units	% all units	Average units per builder
>100	10	1%	2,210	17%	221
51–100	18	2%	1,386	11%	77
31–50	56	7%	2,356	18%	42
21–30	70	9%	1,895	15%	27
11–20	150	20%	2,555	20%	17
2–10	453	60%	2,494	19%	5.5
Total	757	100%	12,896	100%	17

Source: Whats On dataset.

MDH ranges from single-storey attached housing to 6-storey apartments, and the construction skills required vary across the range of MDH. Larger, established detached housing groups are undertaking terraced housing projects up to 3-storeys in timber or light steel framing with concrete inter-tenancy walls. These companies include Mike Greer Homes, Fletcher Residential, Classic Builders and Universal Homes (see Table 7).

Beyond 3 storeys, the work is mainly completed by commercial builders using steel and concrete structural frames and floors. They include established firms such as McGuinness, Kalmar Construction, Hughes Construction, Bracewell Construction, Dominion Construction and Redican Allwood. Some commercial builders have also transitioned to timber-framed low-rise MDH with concrete separation panels, including Hawkins Construction and Haydn & Rollett.

For builders previously working on detached housing, the main issue in undertaking larger-scale terraced housing is the greater funding requirement. As well, there is a requirement for better resource management on sites that are more constrained than with detached housing.

Table 7. Builders of MDH by volume.

Builders of MDH by volume				
Dwelling units consented in the 2 years ending December 2016				
Builder	Number of units	Number of consents	Average units/consent	Location
McGuinness Building Contractors	403	3	134	Auckland
Mike Greer Homes	273	67	4	Various
Ryman Construction	260	40	7	Various
Ebert Construction	222	2	111	Auckland
Kalmar Construction Ltd	141	6	24	Auckland
Fletcher Residential Ltd	130	13	10	Auckland
Yeoman Construction Ltd	125	26	5	Hamilton
CMP Ltd	120	3	40	Auckland
Hawkins Construction	109	12	9	Wellington
Clearwater Construction Ltd	107	1	107	Auckland
Argon Construction Ltd	98	3	33	Auckland
Redican Allwood Ltd	98	7	14	Wellington
Haydn & Rollett Ltd	96	6	16	Auckland
Classic Builders Ltd	94	36	3	Various
Leigh Construction	92	1	92	Auckland
Tristar Construction Ltd	89	16	6	Bay of Plenty
Hughes Construction Ltd	76	2	38	Auckland
Total	2,533	244	10	

Source: Whats On dataset.

The builder-owner relationship

The Whats On dataset lists the owner and builder per building consent. Where both names are the same, this gives an indication of how much MDH is funded by the builder on a speculative basis. Table 8 shows these percentages. It indicates that about 20% of all MDH units are funded by the builder and prior to the builder having a client.

This is commonly known as speculative housing. The builder commences construction without a specific end buyer contracted, having assessed that there will be a ready market for the house to sell during construction or upon completion.

These 'spec-built' projects are quite small at an average of 3.9 units per consent and represent about 20% of all new MDH.

Table 8. Percentage of MDH funded by builders.

Builder and owner relationship		
Dwelling units consented in the 2 years ending December 2016		
	Average units per project	Share of all MDH
Builder and owner the same	4	20%
Builder not the owner	7	80%

Source: Whats On dataset.

Most MDH is built in larger projects with the builder as the contractor only and another organisation funding the work. The latter is either the developer or owner, and the difference between the two is sometimes difficult to discern in the short term. Both commission the design and secure funds for the work. The developer may or may not have committed clients to purchase the units on completion. As discussed above, bank funding is not usually provided without a high percentage of precommitments to purchase.

In the second category, the owner is often a local government, social or aged-care organisation and is largely self-funding.

Where the builder is not the owner, the projects are larger (at 7.0 units per project) than the spec-built projects.

3.1.7 Councils

In relation to MDH, local councils are responsible for the planning, building, environmental health, transport and infrastructure components of development.

Under the Resource Management Act, councils are required to produce, implement and enforce district or city plans. These documents zone land for different types of land use, including residential land use and, in most large urban areas, MDH specifically.

Within district or city plans, councils typically set rules regarding density, amenity, parking, vehicle access, open space, bulk and location (height and set-backs from boundaries and so on). Resource consent is required if a development does not meet a rule in a plan or if it is specifically identified as requiring resource consent under a rule in a plan.

District and city plans can also include design guidelines for MDH, outlining what councils generally expect to see with regard to MDH development.

Through the resource consent process, councils can also take financial contributions for certain types of development. Financial contributions are imposed as conditions of resource consent and typically include three categories of contributions – parks and reserves, roading and infrastructure.

A set amount is charged per unit or lot to contribute towards the council's costs in accommodating the development within its existing open space, roading and infrastructure networks (or mitigating the additional demand placed on these networks by the level of development proposed).

Councils also have obligations under the Building Act and are responsible for monitoring building design and construction to ensure that new buildings comply with the Building Code and any other relevant regulations. To this end, council building inspectors assess building consent applications and check building work on site as it progresses.

Context

Most MDH work is currently being completed in five council areas, including Auckland, Hamilton, Tauranga, Wellington and Christchurch (see Figure 1). The major councils, including these five, have planning guidelines and case studies for building new MDH in the urban environment.

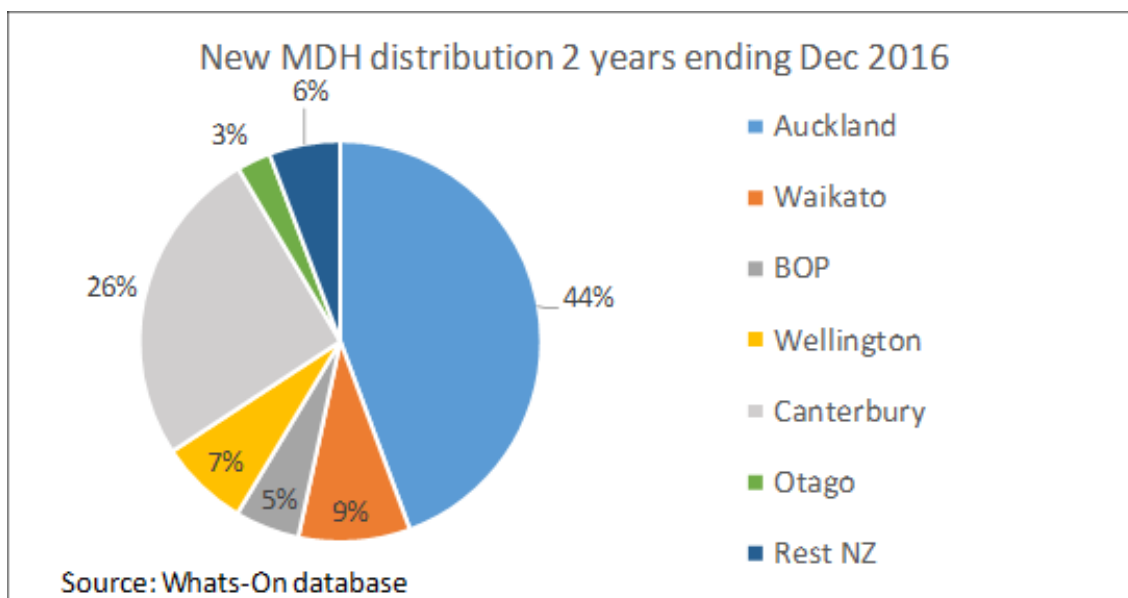


Figure 1. Location of new MDH.

Table 9 identifies the number of building consents granted per council over the study period, with the associated number of units approved. The average number of units approved per consent varied greatly from four units per consent to 19.

Table 9. MDH building consents by councils.

MDH building consents by councils			
Dwelling units consented in the 2 years ending December 2016			
Council	Number of units	Number of consents	Average units/consent
Auckland Council	4,918	407	12
Christchurch City Council	2,231	310	7
Hamilton City Council	817	126	6
Tauranga City Council	434	75	6
Wellington City Council	412	57	7
Waimakariri District Council	199	52	4
Queenstown Lakes District Council	194	41	5
Hutt City Council	112	6	19
New Plymouth District Council	109	10	11
Whangarei District Council	101	25	4
Total	9,527	1,109	9

Source: Whats On dataset.

The technical aspects of building design are less open to interpretation than the planning aspects. There are standard documents that are used to show compliance with the requirements of the New Zealand Building Code. Building inspectors within councils normally have sufficient expertise to competently assess MDH construction documents and to assess the work on site.

However, councils frequently experience periods of high demand and can have difficulty obtaining experienced staff. Some councils therefore consult, collaborate and share staff with each other – effectively leveraging their expertise and attempting to manage workloads where feasible.

3.1.8 Industry organisations

A number of industry organisations have members that are directly involved in the MDH delivery process. This includes umbrella organisations such as the New Zealand Green Building Council and professional or trade organisations such as the New Zealand Institute of Architects (NZIA), New Zealand Planning Institute (NZPI), Engineering New Zealand, Registered Master Builders and New Zealand Construction Industry Council.

Context

The roles of these industry organisations vary, but the majority seek to advocate on behalf of their members regarding relevant industry issues and provide training (conferences and seminars), and some administer professional development (CPD) programmes where members are obligated to obtain a minimum level of CPD points per year.

NZIA has run seminars recently regarding MDH, and the NZPI magazine *Planning Quarterly* has featured articles on MDH projects. Industry organisations have the ability to disseminate information to their members en masse and are knowledgeable about the issues and opportunities facing the industry. They are a vehicle for driving behavioural change and promoting knowledge transfer about MDH delivery in New Zealand.

3.1.9 Central government

Central government agencies such as MFE and MBIE are responsible for the regulatory settings and legislation affecting the development of MDH, including the Resource Management Act (MFE) and the Building Act (MBIE).

Context

Although not directly responsible for delivering MDH, central government agencies can impact the MDH development process through changes to national-level legislation and regulations. For example, changes to the Building Code or Resource Management Act can have significant implications for MDH delivery.

As identified in section 2.1, central government can also produce guidance regarding MDH – for example, MFE's MDH project completed in 2012. This type of influencing role can be utilised to promote knowledge transfer at a national level, ensuring consistency across the country.

3.2 Summary

The following key messages can be taken from each of the stakeholder groups identified in this section.

Developers

- Developers are active in all stages of MDH delivery and are a key group in the MDH development process.
- Small developers tend to start with 2–3 unit projects to gain experience. They generally understand the MDH market and specialise in one segment.
- Small developers often work with the same construction companies from project to project.

- The bottom group (1–10 units per developer) accounted for a sizeable amount of MDH work at 21%, and opportunities exist for smaller developers to scale up and undertake larger MDH projects.
- Large developers have secure sources of finance for new developments, with large equity in their companies mainly from the owners, who are also closely involved in the running of the companies.
- Large developers have often moved into medium and high-density housing projects from a base in commercial and industrial building development. Their management skills in the latter projects are needed in MDH construction.

Financiers

- Financiers for MDH development on the open market (with the exception of social or government housing) are a critical component in the MDH process. Projects cannot proceed without finance.
- Successful financiers carefully assess a developer's proposal, including the level of any presales and whether the developer has obtained resource consents and committed construction trades.
- Financiers look for a significant contribution of equity from the developer and have ongoing relationships with developers with whom they have successfully completed previous projects.
- Financiers obtain their own finance, generally from high net worth individuals rather than from the public at large.
- An understanding of the multi-unit market and of the balance between MDH supply and demand is essential.

Owners

- Social housing providers built approximately 20% of all new MDH over the 2-year study period, making a solid contribution to MDH supply.
- As owners and developers, social housing providers have significant MDH delivery experience and can influence the private sector in terms of delivery and ownership models as well as quality of MDH. They also typically have a feedback loop, given their ongoing relationship with tenants post-delivery, to ensure continual improvement in MDH design and functionality.
- Government-established corporations (such as HLC and Tamaki) can be equally effective as owners and developers, testing different MDH delivery models – for example, community planned environments achieving standards of building performance beyond the minimum provided in the Building Code.

Designers

- 4% of MDH designers are responsible for 26% of MDH units consented in the 2-year study period. This indicates a level of specialisation by these design firms.
- Successful design firms offer a range of skills from planning to architecture and interior design. They have expertise in urban planning principles, which is translated into a range of MDH designs.
- Most designers have repeat clients and provide specialised types of MDH from social housing to high-cost owner-occupied apartments.
- Designers are generally familiar with MDH design guidelines published by the larger councils and demonstrate compliance with the intent of these documents early in the consenting process.



Planners

- Planners are usually involved at the front end of the MDH delivery process. Their involvement typically finishes around the detailed design stage (before construction).
- Planning is an important tool to incentivise MDH by providing for this type of development in district or city plans.
- The planning process can be complex. Therefore, developers use planners to lead resource consent applications or plan changes required to enable MDH.

Builders

- 28 building firms constructed 28% of all MDH units over the study period. This indicates a level of specialisation in MDH delivery.
- There are opportunities for builders completing smaller MDH developments to scale up operations, utilising the knowledge obtained from smaller projects.
- Successful builders form ongoing relationships with experienced developers.
- Builders can be involved at the design stage to ensure that the design suits their construction methods.
- Speculative MDH development (where the builder is the owner) tends to deliver a smaller number of units per project but accounts for a comparatively large (20%) share of all MDH.

Councils

- Councils have a number of regulatory obligations to meet within the MDH process and are the portal through which all MDH development must proceed.
- Over half (53%) of new MDH development consented over the study period was located in Auckland and Waikato. This concentration can put pressure on councils in terms of staff capacity and capability to address the volume of MDH consents received.
- Delays with council through the building and resource consent processes can have impacts on development financing.
- Financial contributions levied by councils on MDH development through the resource consent process can impact project viability.

Industry organisations

- Industry organisations typically represent a large number of members and have the ability to prioritise and disseminate information regarding specific topics (such as MDH).
- Such organisations can also drive behaviour change and promote knowledge transfer.

Central government

- Changes to legislation and regulation can have significant implications for MDH delivery.
- There may be opportunities to utilise central government guidance to promote knowledge transfer at a national level, ensuring consistency across the country.

4. MDH experts

Building on the identification of stakeholders in the medium-density housing (MDH) delivery process in New Zealand, this section outlines an approach for defining expertise to determine who can be considered as experts in MDH delivery. It identifies experts by stakeholder group and considers the common characteristics of these experts – what sets them apart from other stakeholders.

4.1 Identifying the experts

4.1.1 Defining expertise

A broad approach has been taken to identifying experts in MDH delivery in New Zealand. Originally it was intended to define an expert as a person or organisation who had been involved in the building consenting of more than 100 MDH units in the 2-year period ending December 2016.

Limitations of the original definition

However, this definition is volume-based and did not consider other characteristics of expertise such as quality of build, duration of involvement in the delivery process or market desirability of the end product.

Further limitations arose as the Whats On dataset (used to extract building consent information for the study period) did not contain information regarding some stakeholder groups, such as financiers and planners. It also did not contain consistent information regarding designers, as only about 40% of building consents in the dataset included designer details.

It was also apparent from the interviews undertaken that expertise can be changeable and differ from project to project. The point was made that some MDH projects worked well and some did not – even when the same firms were involved.

In addition, the original definition was problematic given the temporal nature of expertise. It looked at a 2-year study period only and did not account for a growth in expertise over time and, conversely, a decline in expertise over time.

A new, more qualitative approach to defining expertise in MDH delivery was therefore taken in order to overcome the limitations above and represent a broader view of expertise.

New definition

For the purposes of this report, experts in the delivery of MDH have therefore been identified not by the number of MDH projects that they have been involved in but from interviews with industry stakeholders undertaken as part of this study.

This more qualitative approach incorporates a wider view of expertise based on industry experience from around the country. It overcomes limitations of building consent data and takes into account less quantifiable aspects of expertise such as market knowledge, relationship management and industry reputation.

4.1.2 Outcome

Using the information obtained from industry interviews, the list below identifies the groups currently considered to be experts in the delivery of MDH in New Zealand.

Note that experts are classified per stakeholder group rather than by specific firm or organisation. This is because, while some firms may be considered experts in respect to certain projects, this may not be consistent across all MDH projects.

In addition, to identify specific firms, BRANZ would need to undertake additional research on the quality of specific MDH developments and market uptake, which are both outside the scope of the current study.

Experts in MDH delivery

In no particular order, the groups identified through stakeholder interviews as experts in MDH delivery include:

- retirement village operators, given that they are the owners and developers of large-scale MDH nationwide with good market uptake
- social housing providers, including those who operate nationwide or at a local level (for example, housing trusts) – again, they are the owners and developers of MDH at varying scales nationwide and their design can influence the private market
- some developers, who are typically invested in MDH projects from inception to completion and need to have excellent market knowledge to be commercially viable
- some group builders who have amassed significant intellectual property in the delivery of MDH through their involvement with large projects such as Hobsonville.

An alternative view

It should also be noted that a small number of interviewees believed that there were currently no stand-out experts in the delivery of MDH in New Zealand and that it was a “fairly level playing field” at the current time.

Notwithstanding, it was considered that there are experts in some specialised aspects of MDH, such as façade design.

Another interviewee stated that there were no experts as MDH delivery “is a team effort”. This highlights that all stakeholders within the MDH delivery process need to work together to ensure a quality outcome.

4.2 Common characteristics

Interviewees were also asked what they believed the common characteristics were of the experts they had identified or what set these experts apart from other stakeholders who had completed MDH projects.

It is useful to understand these common characteristics in order to promote best practice and understand opportunities for leveraging expert knowledge to the benefit of the wider industry.

The common characteristics of MDH delivery experts were considered to fall within one or more of the following categories.

A decorative graphic in the top left corner consisting of a triangle with a gradient from grey to blue.

Experience

The majority of interviewees considered experience to be the most important and common characteristic across experts in MDH delivery. This included experience at the local level given that planning and (to a lesser extent) building requirements differ from council to council. Experience with council requirements, procedures and staff can reduce consenting time and therefore reduce overall development costs.

In addition, experience with specific MDH regulations (particularly fire and acoustic elements) as well as construction management and site processes was considered to be an advantage.

Specialisation

Given the regulatory and construction differences between delivering MDH and delivering single, timber-framed dwellings, specialisation in MDH was considered to be a common characteristic of experts in MDH delivery. Through such specialisation, experience (and the benefits that come with it) can also be obtained.

One interviewee stated that good developers tend to specialise in MDH, recognising it as a niche market to exploit commercially. Other benefits of specialisation, such as efficient construction processes and site management, were identified.

Standardisation

A number of interviewees cited standardisation as a common characteristic of experts. This included predominantly standardisation of design of MDH typologies along with standardisation of some construction processes. This is in contrast to the bespoke MDH typologies currently delivered, which can attract additional costs through repetitive design and consenting processes for each different project.

It was felt that there was a growing role for modular or prefabricated MDH typologies to standardise MDH delivery in the future as these options increased in market desirability and acceptance to councils.

Scale

Experts in MDH were considered to operate at a larger scale, delivering multiple units per project. Roll-out of large MDH projects was considered to attract significant efficiencies of scale at all stages of the delivery process, making projects more financially viable and freeing up capital to focus on build quality.

MDH projects achieving such scale were typically greenfield sites. It was acknowledged that the scale required to ensure MDH viability was difficult, although not impossible, to achieve on brownfield sites due predominantly to the difficulty in obtaining contiguous sites for MDH development.

Market knowledge

Another key characteristic common across experts in MDH delivery was considered to be market knowledge. This included:

- foresight of what the market wants in terms of MDH typologies, number of bedrooms and so on
- how to read the market and anticipate spikes in demand
- how to bring MDH projects to market in a financially viable manner.

Market knowledge is also fairly mercurial in that it can take a long time to obtain and is largely dependent on experience. Market knowledge can also be commercially sensitive and therefore is unlikely to be able to be readily leveraged to benefit the wider industry.

Ongoing learning

Experts in MDH delivery were considered to be those that had systems in place to ensure ongoing learning from the MDH delivery process. This includes feedback loops through post-occupancy surveys to understand how MDH units meet (or don't meet) the expectations of tenants and how they perform on a day-to-day basis. This can lead to design improvements – for example, in the location of refuse areas and the amount of parking provided.

Ongoing learning opportunities can also be realised through the construction process by learning from each project until processes are refined to an optimal level of efficiency.

Understanding of the regulatory environment

The majority of interviewees referenced the complex nature of MDH and the regulatory environment within which it operates, including requirements for MDH development under the Building Act, Resource Management Act and district or city plans.

Experts were therefore considered to be those groups that had a sound understanding of compliance and the regulatory environment for MDH, usually obtained through the delivery of multiple projects.

Relationships

Strong relationships across the industry are another common characteristic of MDH delivery expertise. A number of interviewees identified that successful developers had long-term relationships with designers, planners and builders, undertaking multiple projects with preferred suppliers.

Collaboration and relationship building with councils was also considered to be advantageous in terms of understanding consenting processes and resolving any compliance issues – therefore reducing delays and associated costs.

Overall, experts were thought to be those stakeholders who recognise that greater collaboration is required across professions, as one profession alone cannot deliver quality MDH.

Preplanning

Experts in MDH delivery were also considered to be those that invested time in preplanning of MDH development projects. This included master planning (particularly of large greenfield sites), where time was taken to understand the anticipated target market, site conditions and regulatory environment. Clear parameters could then be established to inform the design of MDH projects to ensure alignment with council requirements and avoid any compliance issues.

Preplanning could also include a range of options for MDH development. This retains a level of adaptability if resource consent is granted for a particular typology, which may reduce in viability by the time construction is due to begin. Variations to approved resource consents can then be sought to alter typologies to the most viable option at

the time – for example, from walk-up apartments to terraced housing, should construction costs and market conditions reduce the viability of the approved form of development.

Capital

MDH would ultimately not occur without the appropriate financial backing. Experts in MDH delivery were therefore considered to be those that had the capital base to undertake reasonably sized MDH projects. Skills were thought to be largely purchasable, but post-GFC finance for construction projects is not always easy to obtain.

4.2.1 Stakeholders not deemed to be experts

Several stakeholders identified in section 3 were not recognised in the interviews undertaken as being experts in MDH delivery. This is not, however, a reflection on their skill level but rather a reflection on their function and role in the MDH delivery process.

Financiers, designers and planners for example are typically involved at the front end of the MDH delivery process including the viability, due diligence and design stages, but not at the construction phase, which is the domain of builders. Similarly, councils and central government have regulatory functions in relation to MDH but do not typically deliver MDH themselves (one exception being MBIE as identified in Table 3 and some local government social housing providers). Also, industry organisations, although extremely knowledgeable about MDH, are not responsible for delivering it.

Of particular note, designers were not identified as experts in MDH delivery in the stakeholder interviews, however good quality design was frequently cited as important. This may be due to a simple lack of association between designers and MDH delivery, with other stakeholders identified more prominently through on-site hoardings and promotional materials.

For the purposes of this report, the identification of experts in MDH delivery has therefore been restricted to those with the greatest leveraging and knowledge sharing potential rather than all MDH stakeholders.

4.3 Summary

The following key messages can be taken from the interview findings analysed in this section.

- There was general agreement amongst interviewees that experts in MDH delivery in New Zealand existed.
- Experts were considered to include retirement village operators, social housing providers and some developers and group builders.
- Common characteristics of experts that set them apart from other stakeholders were considered to include experience, specialisation, standardisation, scale, market knowledge, ongoing learning, understanding of the regulatory environment, relationships, preplanning and capital.
- A small number of interviewees did not believe that there were any stand-out experts at the current time and that MDH delivery was a level playing field.
- It was noted that expertise can vary from project to project, even with the same firms involved. This can be due to different financing and site conditions, the regulatory environment and market fluctuations at the time.



- Another interviewee stated that there were no experts as MDH delivery “is a team effort” and that all stakeholders within the MDH delivery process need to work together to ensure a quality outcome.

5. Leveraging expert knowledge

This section identifies various methods for leveraging expertise alongside the associated barriers and opportunities for deployment within the New Zealand building industry. It draws on the information contained in sections 2 and 4.

5.1 Leveraging methods

A number of approaches to effective knowledge transfer and methods for leveraging expertise have been identified in the literature review undertaken in section 2.2 and the interviews summarised in Appendix C. Of these, five methods are explored in greater detail in this section.

Generally, greater weight has been given to the leveraging methods identified through the MDH stakeholder interviews. This is because these are directly applicable to the building industry in New Zealand. Also, several of these leveraging methods already have established systems in place, and therefore opportunities exist to scale up these systems and achieve efficiencies of time and cost in implementing knowledge sharing initiatives.

The following subsections identify specific leveraging methods and the barriers and opportunities for each within the New Zealand context.

5.1.1 Case studies

The majority of interviewees suggested case studies of best-practice MDH projects as a useful method of leveraging expertise to benefit the wider industry. This is an established method of knowledge transfer, with a number of case studies regarding MDH currently available (see section 2.1).

Barriers

There are few barriers, if any, to using case studies to leverage expertise in MDH delivery. However, the MDH projects used as best-practice case studies should be carefully chosen and fully reported to ensure that useful learning opportunities occur. Often bad examples are as useful if not better than good examples as a learning tool.

Opportunities

Case studies are a known method of knowledge transfer within the MDH industry, and therefore stakeholders are familiar with and seek out case studies as learning tools. There are opportunities to leverage this familiarity and provide a broader range of case studies across the country and with a mix of MDH typologies and construction methods (such as modular or prefabricated buildings).

In addition, case studies could focus on the full MDH delivery process and not just the design stage as is the situation at present. This includes greater emphasis on the initiation phase (due diligence process undertaken and cost-benefit analysis) and the delivery phase (materials used and any construction issues encountered).

One interviewee suggested that case studies should be based on MDH projects that were 7–10 years of age. This would allow a full understanding of what does and doesn't work well within a specific project, post-occupancy when all effects are apparent.

5.1.2 Digital knowledge platforms

Digital knowledge sharing platforms have become common as a tool to bring professionals together to share ideas and information regarding a particular topic. An example is the WEF's Future of Construction knowledge sharing platform described in section 2.2.5.

A common, knowledge sharing platform could be created specifically regarding MDH in New Zealand, containing cross-discipline information for all stakeholders involved in the delivery process. At present, this information is located in a number of different places, including the MFE and industry organisation websites, council district or city plans, building regulations, product manufacturers' websites and so on. Opportunities for coordinating and centralising MDH information in one place therefore exist.

Barriers

MDH stakeholders may experience a lack of time to participate in or use an MDH knowledge sharing platform. It is a leveraging method not typically used in the construction sector in New Zealand and therefore may be unfamiliar to stakeholders. A knowledge sharing platform may also be viewed as being repetitive of other information resources.

Commercial sensitivity may be another barrier to the uptake of a knowledge sharing platform as a method for leveraging MDH expertise. Private firms may not wish to divulge their intellectual property regarding MDH delivery and/or may seek an incentive for doing so.

There would also be a cost involved with establishing an MDH knowledge sharing platform, predominantly in the time to design, set up, monitor and promote a website.

Opportunities

Digital knowledge sharing platforms represent a good opportunity to disseminate information given that they promote theme-based learning and are easily accessible.

In this case, a knowledge sharing platform specifically regarding MDH could be established for use by all industry stakeholders. This would resolve the current issue of stakeholders operating predominantly within their professional groups and looking at 'their part' of the MDH delivery process only. A knowledge sharing platform would have a multi-disciplinary audience and therefore bring stakeholders together on the issue of MDH delivery.

A common theme from the interviews undertaken was that the MDH delivery process is extremely complex, with numerous regulations, policies and guidelines applicable. Opportunities exist for a knowledge sharing platform to reference and provide links to applicable regulations and other relevant information to reduce complexity.

5.1.3 Guidance

As outlined in section 2, extensive local and national level guidance has been provided regarding the design of MDH nationwide. This includes council design guidelines and initiatives such as MFE's MDH project. Such guidance is, however, predominantly focused on the design stage of the MDH delivery process with little or no emphasis on the initiation or construction stages.

Barriers

A small number of interviewees suggested additional national-level guidance as a way to leverage MDH expertise. It was thought, however, that design guidance has the potential to stifle innovation by being too prescriptive and unaccommodating of new thinking regarding MDH design.

Another barrier to the provision of national level guidance may be a lack of political will to produce guidance regarding MDH construction requirements. It is anticipated that MBIE would be the agency responsible for producing such guidance. Any such work would need to be included in the agency's work programme and funded.

Opportunities

Interviews undertaken as part of this study suggested that there is a role for MBIE in providing consistent, national guidance on MDH construction requirements – including on problem areas such as façade design. It was felt that this would be particularly useful given that different councils often have different building consent requirements for MDH, which can create confusion among developers.

Opportunities therefore exist to provide coordinated guidance on MDH construction requirements at a national level to ensure consistency across the country and greater certainty in the MDH delivery process.

5.1.4 Training and accreditation

Interviews with industry stakeholders revealed that the overall level of training in the industry (particularly for builders) was thought to be poor, impacting the quality of MDH delivered. There was believed to be a need to incentivise trades to become properly trained in MDH.

Additional training supported by accreditation schemes was considered to be a method of leveraging expertise in MDH to benefit the wider industry. In particular, some interviewees suggested that a licensed large construction specialist scheme be put in place to recognise specialists in MDH delivery. It was also thought that the Licensed Building Practitioners Scheme could be expanded to include licensing categories specifically for MDH and commercial markets.

Another interviewee suggested that a training levy could be put in place for builders to ensure equal access to training opportunities, remove barriers such as cost and reduce incentives to poach trained workers. This would also mean that firms who prioritised training were not disadvantaged compared to other firms who may not provide training opportunities for staff.

Barriers

Additional training and accreditation schemes for builders would require significant effort to develop, implement and monitor. Political will and time are potential barriers to the realisation of this leveraging method. There would need to be a clear lead organisation alongside coordinated engagement with industry organisations and education facilities.

Opportunities

Opportunities exist to scale up existing industry training and licensing schemes to upskill builders and contractors responsible for delivering MDH. Training initiatives need

not start from scratch although may require dedicated resources to develop and implement.

One interviewee also suggested that more emphasis could be placed on product manufacturers to provide learning and upskilling opportunities. This would increase life cycle knowledge of MDH materials and products by the designers, developers and builders who may use them.

5.1.5 Professional development

Professional development for some stakeholder groups was also raised as a possible method of leveraging MDH expertise.

This could utilise the continuing professional development (CPD) requirements of existing industry organisations such as the New Zealand Institute of Architects, New Zealand Planning Institute and Engineering New Zealand.

It was suggested by one interviewee that CPD requirements could specifically require MDH training for professionals in larger urban areas, with additional CPD points awarded for presenting on this topic at seminars and conferences rather than just for attending them. The intention would be to increase knowledge transfer on targeted topics such as MDH by incentivising training on them through the award of additional CPD points.

Barriers

Targeting CPD programmes of some stakeholder groups to prioritise MDH would require some administrative effort and communication with industry organisations and members.

Another barrier is a possible lack of time by institutes to undertake these changes and by members to attend or prepare presentations for seminars and conferences.

In addition, there are a number of topics and issues competing for the attention of institute members, and MDH may not be a high priority in some areas.

In addition, not all industry organisations involved in MDH delivery have CPD programmes, and therefore this leveraging method would not reach all MDH stakeholders.

Opportunities

Using the CPD programmes of some industry organisations to incentivise training and professional development regarding MDH would utilise existing systems, potentially saving time and money.

Some MDH stakeholders are used to operating within CPD schemes, making this leveraging method familiar and therefore more likely to be taken up.

5.2 Prioritising leveraging methods

Taking into account the barriers and opportunities identified in the preceding section, it would be useful to rank the identified leveraging methods by their potential level of impact in achieving MDH knowledge transfer.

To do this, each method can be assessed against set criteria to determine their priority level.

Table 10 includes criteria (y-axis) against which each leveraging method (x-axis) can be assessed.

It employs a high-level traffic light system to score each method. Green means yes, orange means maybe and red means no (the leveraging method will not achieve the assessment criteria).

Table 10. Assessment of leveraging methods.

	Case studies	Digital knowledge platform	Guidance	Training and accreditation	Professional development
An existing system is in place and can be scaled up	●	●	●	●	●
Is cost effective	●	●	●	●	●
Reaches the majority of MDH stakeholders	●	●	●	●	●
Has proven effective in the past or in other situations	●	●	●	●	●
Can cover the full MDH delivery process	●	●	●	●	●
Can avoid commercial sensitivity issues	●	●	●	●	●

Table 10 ranks the leveraging methods in the following order:

- 1 = case studies
- 1 = digital knowledge platform
- 1 = guidance
- 4 = training and accreditation
- 4 = professional development.

Should MBIE, or any other organisation wish to adopt the identified methods to leverage expertise in the delivery of MDH, it is recommended that they do so in this order. This will ensure that the leveraging methods with the highest impact in terms of knowledge sharing are prioritised first.

5.3 From knowledge to behaviour change

Provision of knowledge alone may not lead towards an improvement in MDH delivery if it does not result in behaviour change. BRANZ research is under way in this area, under the project 'Adopting new ways'. This explores the human factors behind the construction industry's willingness or otherwise to adopt new practices, even when the evidence is clear that there are potential advantages to them in doing so. It is a study of behaviour, attitudes and beliefs. The findings are expected to be communicated in a study report due in June 2018.

5.4 Summary

This section has reviewed five methods for leveraging expertise to improve the quality of MDH development in New Zealand.



The most effective methods of leveraging expertise include the use of the following:

- Case studies – ensuring that these focus on the full delivery process (not just the design stage), cover a range of MDH typologies and construction methods and prioritise MDH projects that have been occupied for a period of time.
- Digital knowledge platforms – creating a theme-based, cross-disciplinary learning portal that is a one-stop shop for information regarding the delivery of MDH. This has the ability to reduce complexity and aid cross-disciplinary learning.
- Guidance – from central government to provide consistency across the country, particularly with regard to building consent and construction requirements for MDH.

Additional methods for leveraging expertise that may incur higher cost and time commitments to establish include the use of the following:

- Training and accreditation schemes – particularly for builders, including a possible licensed large construction specialist scheme, expansion of the Licensed Building Practitioners Scheme to include a category for MDH and/or creation of a training levy.
- Professional development – through industry organisations to incentivise members to prioritise learning regarding MDH through CPD schemes.

It is recognised that a number of additional knowledge transfer methods exist. However, the literature review and interviews undertaken as part of this study indicate that the leveraging methods identified above are the most relevant to the MDH delivery context at this time and can best utilise the existing systems in place.

Leadership is therefore required to drive forward the suggested knowledge transfer methods to improve the quality and affordability of MDH in New Zealand.

6. Summary

This report has brought together information from literature and interviews with industry stakeholders to identify who the experts are in delivering successful MDH projects in New Zealand. It also considers how this expertise can be leveraged to benefit the wider building industry.

It forms part of the second stage of the BRANZ research programme on medium-density housing (MDH) aimed at ensuring that the building industry has the skills to design and build quality and affordable MDH.

6.1 Findings

Who are the experts in delivering MDH in New Zealand?

Interviews undertaken with a range of industry stakeholders provided general agreement that experts in delivering MDH did exist. Experts included:

- retirement village operators – as the owners and developers of large-scale MDH projects nationwide with good market uptake
- social housing providers – particularly those operating at the national level – as the owners and developers of MDH and with the ability to influence the private sector
- some developers, who are typically invested in MDH projects from inception to completion and require excellent market knowledge to be commercially viable
- some group builders who have amassed significant intellectual property in the delivery of MDH through their involvement with large projects such as Hobsonville.

Common characteristics of these experts included experience in delivering MDH, the ability to specialise in MDH and standardise building typologies and processes and the ability to operate at the large scale. Experts also displayed astute market knowledge and understanding of the regulatory environment. They typically undertook ongoing learning initiatives and preplanned developments to reduce overall project time and cost. Experts had extensive relationships across the sector and the capital base to allow them to progress MDH projects.

In contrast, some interviewees indicated that there were currently no stand-out experts in the delivery of MDH, as it is a team effort requiring the consistently high performance of all stakeholders involved.

How can this expertise be leveraged to benefit the wider industry?

The most effective methods of leveraging expertise regarding MDH delivery include the use of:

- case studies – ensuring that these focus on the full delivery process (not just the design stage), cover a range of MDH typologies and construction methods and prioritise MDH projects that have been occupied for a period of time
- digital knowledge platforms – creating a theme-based, cross-disciplinary learning portal that is a one-stop shop for information regarding the delivery of MDH, which has the ability to reduce complexity and aid cross-disciplinary learning
- guidance – from central government to provide consistency across the country, particularly with regard to building consent and construction requirements for MDH.

Additional methods for leveraging expertise that may incur higher cost and time commitments to establish include the use of:

- training and accreditation schemes – particularly for builders, including a possible licensed large construction specialist scheme, expansion of the Licensed Building Practitioners Scheme to include a category for MDH and/or creation of a training levy
- professional development – through industry organisations to incentivise members to prioritise learning regarding MDH through CPD schemes.

6.2 Implications

These findings give rise to various implications for the building industry as it seeks to improve the quality and affordability of MDH in New Zealand.

For example, strong leadership is required to commit the time and resources necessary to foster expertise and undertake the knowledge transfer initiatives required to upskill the building industry to design and build quality MDH. This leadership could be provided by individual industry organisations engaging with their industry or profession, although this would be limited as such organisations tend to have meagre resources spread across a range of issues. A coordinated effort, led by central government (MBIE) or a conglomeration of industry organisations is likely to have the greatest impact.

A strong message emerging from the interviews undertaken was the need to improve training opportunities and accreditation schemes, particularly for builders. Suggestions in this regard include the options outlined in section 6.1. Again, strong leadership is needed to ensure that a cost-benefit analysis of each of these options is undertaken with accountability for implementing a preferred option.

Across the MDH delivery sector, greater use could be made of industry organisations (as identified in section 3.1.8). Industry organisations typically represent a large number of members and have the ability to quickly disseminate information regarding specific topics (such as MDH). Industry organisations have systems in place, are generally well known and are in a good position to promote knowledge transfer. Behaviour change does not necessarily result from provision of knowledge. However upcoming BRANZ research 'Adopting new ways' will help to bridge this gap.

Another outcome of both the interviews and literature review undertaken was the need to cooperate and collaborate across the industry to improve MDH built outcomes. This will require a cross-disciplinary effort and, again, leadership from an appropriate organisation. Barriers to collaboration such as commercial sensitivity need to be further investigated and overcome, perhaps by prioritising information sharing by non-private sector organisations to protect commercial advantage.

Collaboration is also required between industry organisations and central government, with whom it would be beneficial to have a closer working relationship. Changes to legislation and regulation can have significant implications for MDH delivery, and industry organisations can be useful vehicles for testing any such changes and providing feedback to policy makers. There may also be opportunities to utilise central government guidance to promote knowledge transfer at a national level, ensuring consistency across the country.



Another implication of the research findings is the need to target knowledge transfer at the stakeholders most in need of upskilling. From the research undertaken, this appears to include council staff and site project managers although could include representatives from most of the stakeholder groups (including designers and builders). Targeting knowledge transfer by recipient and by topic represents an efficient use of time and resources.

In addition, opportunities exist for the building industry to embrace new technology and construction methods – for example, modular or prefabricated buildings. Experts in these areas could be utilised as champions to increase understanding particularly amongst council staff, who may not have the processes in place to easily adapt to new technologies.

Finally, this research has identified the need to investigate financing options for MDH development to fully understand the impact of government and bank policies on borrowing. A number of interviewees identified lack of capital as a major disincentive to undertaking MDH as opposed to traditional, lower-density developments. Better clarity on this issue and on the communication lines between first and second-tier financiers and developers has the potential to optimise MDH delivery.

The findings and implications of this study report create a platform from which the industry can further consider opportunities to upskill and improve the quality and affordability of MDH in New Zealand. It complements the BRANZ MDH research programme and provides practical suggestions for increasing knowledge transfer. Through a process of ongoing learning and collaboration, underpinned by strong leadership, the industry has the potential to increase the attractiveness of MDH to New Zealanders and embed this type of living in the national psyche.

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Appendix A: Additional Information

This appendix summarises issues raised in interviews with MDH stakeholders that fall outside of the research question. Notwithstanding, this information is valuable to the wider BRANZ MDH research programme and is included here for future use.

Barriers to the delivery of quality MDH

- Inefficient council processes and continual changes in lending requirements.
- Mechanisms to aggregate land and achieve financial viability of developments are needed. For example, the Auckland Unitary Plan currently encourages density, but the full development potential of sites is not realised as it is not viable to build 16 metre high buildings.
- Scale was considered to be a big issue in delivering MDH, given housing opportunities are relatively small in New Zealand compared to overseas. Therefore, there are fewer efficiencies of scale. Need a way to look at larger groupings of housing to replicate design and allow better integration at the construction stage. It can lower costs to have only four typologies within a large development.
- Other issues with MDH requiring resolution include better supervision of construction, more focus on end-to-end quality and the need for participants to take responsibility for the full MDH development process and not just parts of it. Joined-up processes are required and a robust QA system.
- There are too many regulations and requirements regarding MDH – no one professional is likely to know and keep up to date with all of them. The complexity of MDH development is therefore a significant challenge to its delivery.
- Access to infrastructure and services can be a barrier to good MDH.
- The current land use system incentivises building of the largest house possible on a single site, and this needs to change.
- Barriers to developing quality MDH were thought to include the cost and availability of builders. This company has an early contractor involvement (ECI) process and are looking at modular or prefabricated options to increase productivity.

Possible solutions to improve MDH

- Construction specialists are required for MDH rather than general builders. There could be a licensed large construction specialist scheme. Using cheaper contractors doesn't pay in the long run as issues can arise.
- Adequate quality assurance throughout the build process would ensure quality and avoid rework.
- Could look at developing a cross-sector National Environmental Standard (NES) for MDH under the RMA.
- MDH would benefit from standardisation of design (modularity brings down build costs), while ensuring diversity of the end product. Buildability is key.
- Good minimum standards are needed.
- Help developers to know which subcontractors to use. For example, façade design is very specialised, and while some façade design firms are good at understanding the council requirements, others are not. Developers are uncertain who the right people are to use on their projects.
- Architects and engineers need more training on the Building Code through the education system. Currently, the system is around the wrong way, with building consents being the ambulance at the bottom of the cliff. Issues should be resolved before projects reach the building consent stage.

- It would help MDH delivery if district/city plans and infrastructure development codes are consistent. There should be base rules applicable across the country.
- There is a role for builders in city plan development and resource consent process to ensure issues are taken into account early – before the building consent stage.
- The industry could better delivery quality MDH by being organised and having dedicated project management, reviewing site licence classes to include MDH as originally intended and increasing knowledge and resources regarding MDH.
- Opportunities exist to improve the Building Code and regulations to achieve better built outcomes. MBIE has room for improvement in dealing with the harder issues.
- The industry should also be pushed to think about all aspects of MDH development, from design to durability and so on.
- Overall, it was considered that standards (the Building Code) should be toughened up to ensure better quality MDH.
- Training needs to be improved, and exemplar developments should be shared so that others can learn from them.
- MDH needs to time itself to market conditions and have the right socio-economic conditions to be successful.
- Need to get all parties in the MDH delivery process together and agree a clear building and planning process. The system is currently combative, and there is a need to collaborate with industry to develop any new system. The current system is complex and process focused, adding little value to the end product.
- Need to be more community focused in the development of MDH projects. Development could be rated on community enhancement. In the UK, a social development score is attributed to developments. Below a certain score, developments can't proceed. Above a certain score, developments can obtain reductions in council levies and development contributions.
- Need to upskill and educate builders – with a focus on what they should be doing, not what they shouldn't be doing.
- Strong feedback loop, with post-tenancy surveys to understand effects of housing.
- Current Auckland initiatives include:
 - a 'consenting made easy' project to change industry behaviour and ensure better alignment between council and the industry
 - allocation of a dedicated council staff member to larger building consent applications to ensure continuity and guidance through the process
 - a qualified partner programme to raise awareness of building consent requirements and standardise plans and processes – this group includes developers focused on MDH who meet monthly.

Who is responsible for improving MDH?

- The government has a role to play in ensuring that projects specify a requirement for contractor training.
- Leadership from government (MBIE) is required as there are many parts to the problem and a consistent approach would be useful.
- Greater guidance is required from central government to deliver MDH. District plans provides some requirements but better overall guidance is needed.

What role can industry organisations play in improving MDH?

- Advocacy and quickly upskilling their members on MDH-related matters.
- Improving the quality of MDH through building rating systems, which are currently well used by medium and high-density housing projects.
- Setting good vision and providing a unified voice (strong leadership is also needed)
- Providing advocacy, particularly regarding project finance, planning and scale.



Appendix B: Interview questionnaire

Interview preamble

At BRANZ, we define MDH as 'multi-unit dwellings up to 6 storeys'. This includes a variety of typologies ranging from duplexes, terraced housing, low-rise apartments and apartments up to 6 storeys. Please keep this definition in mind as we go through the interview.

Let me start by explaining that throughout this interview I will refer to the 'delivery' of MDH. For our purposes today, delivery means any stage in the process of bringing MDH to market – this includes designing, consenting, developing, constructing, code of compliance and sign off or any other part of the process. Does that make sense?

All

1. First I'd like to learn a bit about who you are and what your interest is in MDH. What is your current role?
2. What is your work experience with MDH?
3. Can you describe a good example of MDH that you're aware of in New Zealand? Why do you consider this a good example?

Financiers

4. What problems do you see MDH developers struggling with?
5. How are MDH development projects typically funded?
6. In your opinion, is the market functioning effectively?
7. How do you determine which MDH projects to finance?
8. How do you gauge supply and demand of MDH, and generally how reliable are these indicators?

Owners

4. In your experience, what are the advantages of developing & owning MDH as opposed to other typologies?
5. Conversely, what are the disadvantages of developing & owning MDH?
6. In your opinion, what are the barriers to developing quality MDH in NZ?
7. What do your tenants generally think of MDH as opposed to other typologies?

Body corporate administrators

4. How does 'good' MDH development benefit body corporates and/or owners?
5. At what stage are you typically appointed to an MDH development?
6. Do you get to provide feedback to developers or others involved in MDH delivery, and if not do you think this would be useful?

Planners

4. At what stage of the MDH design process are planners usually brought in?
5. What value do planners add to the MDH delivery process?
6. In your experience, does your local council have the capacity and capability to plan effectively for MDH? If not, why not?
7. What tools do councils typically use to plan for MDH?

8. Do the developers you work with have a good understanding of planning constraints and the overall planning process? How does this impact on the ability to get good MDH outcomes?

Councils

4. Has the increasing amount of MDH development put pressure on your building and planning teams? In what ways?
5. In your opinion, does your council deal effectively with building and resource consent processes for MDH?
6. What are the quality of MDH building and resource consent applications like?
7. What do you see as the main obstacles for developers in completing quality MDH?
8. Is your council planning for more MDH in the future? If so, how?

Industry organisations

4. Are most of your members aware of, and/or work on, MDH projects?
5. What kind of issues do they experience when working on MDH developments?
6. In your opinion, how could the industry produce better quality MDH?
7. What are the current road blocks, if any?
8. What role do you see your organisation playing in improving the quality of MDH in NZ (if any)?

All

9. From your experience, who would you say are the experts in delivering MDH currently? Experts being those firms or groups that do MDH well.
10. What sets them apart as experts?
11. What would be the best way to leverage this expert knowledge, to benefit the wider industry?
12. Final question now. In an ideal world, how do you think the industry could better deliver quality MDH?

Appendix C: Interview summaries

This appendix includes findings from phone and in-person interviews with representatives from organisations within identified stakeholder groups.

Developers

Developer 1

A small-scale developer typically doing 1–10 unit developments and who does a variety of developments. A successful development with strong demand was for a low-rise MDH in the city fringe areas along a transport route. They provided a play area/green communal space at the heart of the development. They have also continued building large detached houses (5 bedrooms) on small sections (300 m²) for two families of new immigrants. These owners previously lived in apartments and see their new house as a step up. The developer says there is quite high demand for these multi-family houses.

Developer 2

Developer 2 identified a market gap of empty nesters, which they believe will remain unsatisfied for several years for quality apartments in the CBD fringe. The other market is young professions with no children who buy small entry-level apartments close to transport. They work hard at the initial planning stage to provide all the information council needs to issue consents promptly. Their designs usually avoid the need for notification by staying within the design guidelines, hence reducing delays.

Developer 3

Concentrates on the more affordable MDH market of around \$10k/m² where the market demand is large and unsatisfied. These are 3–4-storey walk-ups in the inner suburbs. They have no car parks in these developments, and proximity to local amenities and transport links is vital for these to work. They are looking for replication of design to other projects using the same designers and builders, with limited redesign and quicker consenting.

Developer 4

This developer has 15 years' experience in industrial units and strip retail development. The current development, for approximately 40 units, is a live-and-work 3-storey terraced development. The ground floor is an office or light industrial space, 50–90 m² in size, with the living space above. It is a new property type for this developer, and current sales are said to be over 50% committed. However, this development was first advertised 18 months previously with different real estate agents, and construction is just now under way. Comparing earlier and later publicity, the units have been redesigned to present a less residential and a more business activity face. This is in line with the predominant semi-industrial activity in the area, while still maintaining attractive building design with broken roof lines and set-backs for upper decks.

Developer 5

This developer is small scale and has done five projects only, over a period of 4 years, with an average size of three units per project. He is a part-time sole person developer who also runs a company providing other services to the building and property industry. He had long experience in the building and property industries as an

employee before becoming a developer. The motive for establishing a development company was to make a profit. Also, he wishes to influence how an increase in housing density occurs in his local area of interest. This is a suburb of Wellington City where the council has issued design guides for a zone of medium density.

His projects have been successful and well received by investors and owner-occupiers. One of his sites visited had four 2-storey units near completion looking tidy and well finished. The next stage on this site is another five units. The developer has scaled up just for this project and said he is unlikely to expand further in the medium term. He has used the same builder previously. Also, he uses the same designer, based locally and who is familiar with the zone design requirements. The licensed building practitioner (LBP) supervising four workers, all company employees, said labour turnover is low. They travel daily from the Kapiti Coast, and the work has proceeded quickly with no hold-ups. They have a fixed-price contract.

Developer 6

This firm has been in property development for several years, a two-person outfit with financial and building skills. This mix works well for them. They usually arrange the site development works separately from the building works. Project sizes range between three and 40 units per project with an average of about 10 units per project. The 40-unit project was their most difficult, and they would hesitate before undertaking another this size.

The finance partner also has an ongoing relationship with a construction company, which they have used on some of their MDH projects. This relationship is not exclusive because of other commitments the construction company has. Also, the developers need to test the builder market from time to time. They try to use the same designers on their projects mainly because of the intellectual property they have developed on designs that work for them and their construction companies.

They have successfully expanded from the smaller projects to larger projects. Their latest project inspected was for 15 units on a sloping site requiring extensive civil works. The site foreman said labour skills were OK but needed constant checking. The site had three to four LBPs for a total workforce of up to 20 persons, using a labour-only contract.

Land prices are rising, and they have failed in their last two bids for land. They calculate that, if they paid the winning price, their proposed townhouse prices would have been well over their targeted sale price of \$600,000 per unit. Another of their bids, which was initially successful, did not proceed further because they were unable to persuade the council to increase the housing density under the discretionary option.

The only consultants they use are valuers, and they prefer to get more than one estimated sales price for their proposed developments. Even at their comparatively small scale, developments take 2 years plus from land purchase to sale of all units.

This developer believes the reasons why developments fall over are:

- the developer does not understand the risk of what they are developing
- some developers overexpand
- the developer fails to recognise development cycles, they underestimate development timeframes and projects can be badly affected by downturns in demand.

Developer 7

A new MDH developer with three completed projects of four, five and seven units per project. Previous experience has been mainly in detached housing as a developer and as a builder. He currently employs five skilled and semi-skilled builders on a permanent basis. His goal is to build up his rental portfolio. To this end, he retains some units and sells others. The latter is to ensure sufficient equity for future projects. The trading bank provides funding but has recently become more conservative, hence a need for more equity.

The last project, near finished, is all single-storey multi-units. He prefers to build 2 storeys, where possible, because of better utilisation of land. In the current project, demand was mainly for single storey, which are slightly cheaper and easier to sell.

The same specialist personnel are used on all his MDH projects, including a valuer, designer, real estate agent and subcontractors. In the future, he expects to do approximately one small (up to 10 units) MDH project per year.

Observing other developments, he notes that, when they fail, it is due to an underestimate by novice developers of the difficulties involved. This includes paying too much for the site and an inadequate understanding of the planning rules. The latter results in fewer units per site than anticipated. Also, projects gone wrong often underestimate the time from land purchase to start of construction (typically 12 months for small MDH), and insufficient equity held by the new developer is sometimes a cause of failure.

At present, he has noticed an increase in sites offered for sale that have building consents. He believes this represents undercapitalised developers finding the development more difficult than expected and a slight slow-down in demand for new multi-units.

Developer 8

An established development company with three directors, two of which have architectural and engineering design practices. The third director has general business experience. The director answering the questions is a designer. The team are doing developments at about \$30 million per year, mostly commercial. In recent years, they have done several MDH developments. The current development is for 40 units in a 3-storey concrete panel and floor structure. These units will sell for about \$2,700 per m², and they believe this is cheaper than with timber-framed construction. They are the third developer on this site. The other two were not able to get their proposed selling price sufficiently low to meet the market. They also underestimated the time and cost of the approvals process.

His expectation is that he will undertake further MDH projects assuming the current project is successful. All their developments are done under a new company structure for legal reasons. In their engineering practice, they provide advice to other developers about best design options from a market viewpoint, using their developer experience.

The main difficulty they have is in getting Building Code clause C 3.6 and 3.7 waivers (fire clauses) in Christchurch. Other councils (Auckland and Wellington) have waivers for these clauses for MDH.

A decorative graphic in the top left corner consisting of several overlapping triangles in shades of blue and grey, pointing towards the right.

Developer 9

A land development company with five principals and many years' experience in the local market. They do not develop housing but sell to the major builders (Mike Greer, Horncastle and Golden Homes). Sales are about 150 sections per year. Funding is all internal to the company. They are aware of other developers who rely on bank funding, which is being curtailed, and these developers are reducing their developments.

A greenfield project done by this developer included a 10 kilometre waste disposal line to an existing treatment station, which was constructed before final agreement was reached with the council. The line was then vested with the council and involved some risk on the financial viability of the development, which in the end was positive.

Zoned land supply in Canterbury is becoming short, and they await the updated district plans later this year. The builders they sell to are doing mainly detached housing, but a proportion (about 10%) are for terraced housing. They have developed residential land in Auckland recently and are looking for further opportunities there.

Financiers

Financier 1

A private equity firm whose primary purpose is to fund property developers through mezzanine lending and other forms of finance. Developers usually approach this firm in combination with lending from a major bank (this finance firm does not provide 100% funding).

Prior to the GFC, this firm financed mostly subdivisions but now mostly finances medium-density housing and apartment developments. A good example of MDH is the Pollen Street Apartments in Auckland. This recently completed development is of good quality although may have less parking than would be ideal.

In this firm's opinion, developers struggle with the initial cost of getting a project up and running particularly when banks change lending requirements. For example, banks recently changed to requiring full building consent approval before lending, meaning that the developer must finance the entire detailed design stage, which can be expensive.

In addition, the market is very changeable, and costs can rise quickly. For example, developers sell off plan, but by the time units are ready to hand over to purchasers, construction costs may have risen, and the developer is locked into the prepaid price, meaning that margins are small.

Well capitalised developers tend to fund, build and sell their own developments. Less well capitalised developers must rely on banks and private finance firms for equity. There are fewer finance companies around now since the GFC.

In this firm's opinion, the market is not currently functioning effectively. Funding restrictions can discourage development, and a lot of MDH and other developments have not gone ahead in the current climate. Margins for developers are small, and it can be hard to secure funding. The tightening of bank capital restrictions has hurt developers. This firm believes that, currently, there is not enough MDH supply.

This finance firm does not have set criteria by which to assess lending applications for MDH projects. They fully analyse feasibility and verify costs and assumptions. They use quantity surveyors to confirm this information at the initial assessment stage and also on a monthly basis through the construction phase.

Examples of MDH experts include the Hobsonville Land Company and McConnell Property. What sets them apart as experts includes their experience in delivering MDH and also the relationships they have formed across the industry. Some smaller developers are good but can lack experience. These experts may lack time to share their knowledge as they “have their hands full” – particularly with the recent government prioritisation of home building.

In this firm’s opinion, industry could better deliver MDH by improving council processes. Councils can hugely impact the deliverability, timeframes and cost of MDH development. Some councils are inefficient and understaffed, incurring costs that are ultimately passed on to the home buyer. Resource and building consents and development contributions are particular areas of high cost to developers.

In summary, the two key things that can negatively impact the delivery of quality MDH are inefficient council processes and continual changes in lending requirements.

Owners

Owner 1

A body corporate management firm with a portfolio of approximately 15 multi-unit developments. This management firm believes that good builders are key, as they have experienced continuous issues where MDH projects have not been well constructed. Often MDH is built to Code but still experiences numerous failures.

Usually developers sell MDH and move on. However, this management firm builds relationships with developers and sometimes provides post-occupancy feedback on operational performance of an MDH building in order to improve future MDH projects.

In terms of experts in MDH, this firm believes that MDH delivery is the responsibility of builders, not developers. However, it is acknowledged that MDH delivery is a team effort and that most developers have preferred suppliers.

One way of leveraging expert knowledge was thought to be the use of case studies of successful MDH projects. This could identify the characteristics of success to enable repetition of the delivery pattern. It was suggested that case studies should be undertaken of buildings 7–10 years old, not new developments. This is so that the true liveability of the MDH can be assessed.

This firm believes that construction specialists are required for MDH, not general builders. There could be a licensed large construction specialist scheme. Using cheaper contractors doesn’t pay in the long run as issues can be experienced.

Owner 2

A large retirement village operator, this owner develops and retains MDH properties across the country. Standardisation makes it economic to build MDH, as it brings higher productivity than construction projects on the general market. This owner usually uses the same firms on an MDH project with some geographic variation.

Has encountered difficulty attracting top-quality staff due to standardisation of the development process. This is not as attractive to staff from a design and construction perspective. However, they have a continuous learning programme in place and are not stifled by standardisation.

This owner believes that the New Zealand general market may not support MDH because the quarter-acre dream prevails (people want their own piece of land, with a stand-alone dwelling). Low productivity in the housing sector is due to the client's quarter-acre dream rather than inefficiencies in the construction industry.

Retirement village developers are experts in delivering MDH along with most mid-tier regional developers. What sets them apart as experts is speed and capability and experience in the MDH market.

It may be difficult to leverage this expert knowledge given the commercial sensitivity involved – don't want to give away trade secrets. Could get experts together in a knowledge sharing forum although some incentives may be required.

The overall level of training in the industry is currently poor, impacting the quality of MDH. Need to incentivise trades to become properly trained. This doesn't necessarily mean apprenticeships, but contractors could perhaps pay a training levy.

The government also has a role to play in ensuring that projects specify a requirement for contractor training. Also need an open-minded look at the LBP regime, which misses the mark in the Auckland market. Could expand licensing categories into MDH and commercial markets. Adequate quality assurance throughout the build process would also ensure quality and avoid rework.

Owner 3

A large, nationwide social housing provider that owns and develops MDH. Typically, this company takes contiguous sites and redevelops them from, for example, four houses on four adjacent sites to 16 MDH units on one amalgamated site. They offer a mix of unit sizes of 1–6 bedrooms.

Land is a limited resource so MDH is good for increasing yield and creating communities. There can be issues with transport, infrastructure and a lack of demand in some areas.

Barriers to developing quality MDH were thought to include the cost and availability of builders. This company has an early contractor involvement (ECI) process and is looking at modular or prefabricated options to increase productivity. Another barrier is that, in most areas, infrastructure is not set up to meet demand.

This company has a strong feedback loop and undertakes post-tenancy surveys to understand the effects of the housing. Previously, the Homestar rating system had been used for a period of time but was found to add cost.

They are currently undertaking a standardisation project with an aim to having 80% of new builds of a standard design. This is based on a 2-storey, 2-bedroom timber-framed unit. Modules can then be added should additional bedrooms be required. This company has historically used standardised design but is now refining costs down to the last nail.

It was thought that experts in delivering MDH currently include Ockham Residential, the Hobsonville Land Company (HLC) and maybe Todd Property. What made them stand out as experts is their understanding of the market and construction processes. Typically, they are driven by outcomes and not by margins, keeping the community and end users in mind.

In terms of leveraging this expert knowledge, some knowledge sharing may be possible with quasi-government developers (such as HLC), but there will likely be issues around intellectual property for private developers.

Overall, it was felt that there was a need to be more community focused in the development of MDH projects. Development could be rated on community enhancement. In the UK, a social development score is attributed to developments. Below a certain score, developments can't proceed. Above a certain score, developments can obtain reductions in council levies and development contributions.

It is currently a difficult time for the industry in terms of balancing the cost, time and quality of development. Increased costs can lead to decreased quality. Also, we need to upskill and educate builders with a focus on what they should be doing, not what they shouldn't be doing.

Designers

Designer 1

A firm designing low-rise MDH (to 3 storeys) and up to eight units per project. The council design guides are useful but still open to some interpretation by council planners. Generally, the latter have become more accommodating with designers rather than having rigid rules on how MDH is to be done. In MDH zones, they find their design is more acceptable to council when they consider whether it is likely to limit the neighbour's ability to redevelop. They have gone to the extent of getting neighbour agreement to install inter-tenancy walls on the boundary for future development by the neighbour. In a local low-rise MDH zone, the rules allow 50% building coverage, but this is difficult to achieve given the section sizes, the need for parking space and associated turning circles plus the requirement for a mandated outdoor space for each unit.

Their view is council did not adequately consider the practical feasibility of getting widespread 50% building coverage, given the shape and size of sections in these zones. Also, many of these sections have been infilled prior to the rezoning to MDH, and it is often not financially viable to buy these sites, demolish the existing houses and put on multi-units.

Developers often consult with them on the feasible number of units before purchasing a section for redevelopment. However, some have purchased, request a design for a specified number of units and are disappointed when this is not achievable within the planning rules.

Designer 2

A small firm doing townhouses and terraced housing in the Wellington region. The council encourages collaboration with them early on in projects. Generally, the council planners are consistent in their requirements based on their guideline design documents. However, interpretations change with new planners, which occur quite

often. Because of this and varied site conditions, it is difficult to predict how well the approval processes will proceed.

For their clients, MDH is a step up from detached housing development due to the need to have landscaping, geotechnical specialists, shading consultants and MDH specialised planners involved in preparing the applications to councils.

Most clients of this design firm are repeat clients who have started with infill housing before progressing to MDH. Even so, they sometimes find the 2-year timeframe (from conception to unit sales) a challenge financially.

From the designer's perspective, the main factor restricting good design is short timeframes, which often do not allow for design iterations to produce a good design. They find it a struggle to educate clients on the trade-off between design time and the quality of the design.

Designer 3

A small firm in the Waikato doing projects up to 3 storeys including terraced housing and commercial ground floor with apartments on upper floors. They have three to four repeat developer clients plus one-offs. Council is quite inconsistent in their planning decisions, mainly due to new staff – design details previously acceptable are no longer acceptable. They tend to rely on the client's planning consultant rather than sort out the detailed planning issues related to the design. The major factor limiting their ability to produce good design is the developer's aim to maximise profit. This limits their choice of materials and their ability to explore alternative structural solutions, which would result in better space utilisation.

Designer 4

A large firm in Auckland doing MDH and high-rise apartments. For MDH, they use the reference projects in the design guides to show clients the options for street frontage, fencing and parking layouts. They have good relationships with the council planners and find their decisions reasonably consistent. However, parking and fences continually cause design issues. One-car garage is the maximum possible with terraced housing, otherwise terraced housing becomes "very tricky" to design. Often the north-facing outdoor space is on the road side, and this causes conflicts between privacy and low fencing requirements.

The main issue in producing good MDH is the high cost per m² compared to detached housing. These issues are new or more complex than for detached house building. Some inexperienced builders have taken on terraced housing, and they need close guidance. The design firm has guided such novice developers in the extra complexities (compared to detached housing) of fire, acoustics, precast panels, health and safety, steelwork shop drawings and site management.

Designer 5

A medium-sized firm in Auckland and Wellington doing social and private MDH of up to 30 units per project. Most of the developers they work with are repeat clients who have firm ideas on what they want in their units. These developers are aware of the planning requirements but usually ask the designers to prepare sketch site layouts before they purchase a site. The designers occasionally go for discretionary approvals to exceed boundary and height limitations, not always successfully. They find approvals are easier and quicker in the special housing areas. Their main complaint is

car parking requirements for residents and visitors, which results in an expanse of hard surfaces. They argue that this should not be required on transport routes, which would enable another 15–20% of units to be provided per site and more green areas. The other problem areas are service connection issues and “excessive” development contribution charges in Auckland.

Planners

Planner 1

A multi-disciplinary, nationwide consultancy providing planning, landscape architecture and urban design (amongst other) services. This representative was based in Queenstown.

Typically works for private sector developers. Involved in MDH through the local district plan review (particularly regarding affordable housing) and ensuring the efficient use of land. There is currently huge pressure on housing in Queenstown, leading to a desire to maximise density and provide for worker accommodation.

Good examples of MDH were thought to focus on design and the quality of the built outcome – not just going for cheap and nasty solutions. The Queenstown Lakes Affordable Housing Trust has delivered some good MDH projects.

Planners are usually involved at the start of the MDH design process, working with architects at the site appraisal stage (advising of potential site yield and bulk and location requirements and so on). After that, planners input through the design and consenting stages. Planners also undertake a lot of policy work to provide for MDH – for example, including zoning and density provisions in district plans to provide for MDH.

It was thought that planners add value to the MDH delivery process by helping with the process of change and by creating opportunities for housing to occur. This is particularly through district plan provisions (zoning or urban growth boundaries) and the responsible reporting of environmental effects created by development and consequent mitigation measures leading to sustainable built outcomes.

This planner found that, generally, councils have the capacity and capability to plan effectively for MDH. In Queenstown, the council is willing to promote higher density and understands the market pressure of MDH development (including the provision of infrastructure).

With regard to the tools that councils may use to plan for MDH, it was stated that this is quite fluid at the moment. Usually, councils use district plans (zones and urban growth boundaries) to constrain sprawl and consolidate urban areas. More recently, however, other statutory mechanisms have emerged such as special housing areas and government infrastructure funds to help councils provide the infrastructure required to support housing development.

Also, councils can use rates to incentivise housing (through discounts on rates). Development contribution policies under the Local Government Act can also encourage housing. In Queenstown, the council is seeking to control visitor accommodation (such as Airbnb) through changes to the district plan to limit the number of nights of visitor accommodation provided in order to free up housing for residents.

This planner believes that experts in MDH delivery include HNZA and private sector providers. MDH is driven by the private sector and also some trusts (such as the Queenstown Lakes Affordable Housing Trust). What sets these parties apart as experts is their focus on both delivery (the Trust has a waiting list, so is motivated to deliver) and quality.

This best way to leverage this expert knowledge to benefit the wider industry was thought to be through connecting with key individuals with local and international experience in delivering MDH.

Scale was considered to be a big issue in delivering MDH, given that housing opportunities are relatively small in New Zealand compared to overseas. Therefore, there are fewer efficiencies of scale. We need a way to look at larger groupings of housing in order to replicate design and allow better integration at the construction stage. It can lower costs for example to have only four typologies within a large development.

Quality is very important in MDH. It shouldn't be a "race to the bottom", and a focus on quality should be retained (building beyond minimum Building Code standards). MDH should look to increase liveability and provide warm, dry homes. This quality is also needed to motivate Kiwis to live in higher-density typologies. There should be some demonstrable advantages of living in MDH over living in timber stand-alone houses.

To achieve this, leadership from government (MBIE) is required as there are many parts to the problem and a consistent approach would be useful. Possibly a cross-sector National Environmental Standard (NES) for MDH.

Planner 2

A multi-disciplinary, global consultancy providing planning and engineering services. This representative was based in Auckland and undertakes planning work predominantly for private developers.

Stonefields in Mt Wellington (Auckland) is a good example of MDH. It works as a community and has good design and access to parks and schools. Parking could be better though.

Planners are at the front end of the MDH delivery process. This could involve plan changes (to district or city plans) to provide for MDH or inclusion at the concept and preliminary design stages. Planners typically lead the resource consent process, and their involvement in MDH delivery usually finishes at the detailed design stage.

MDH is a complicated system due to multiple statutory requirements. Planners add value particularly at the resource consent stage.

In this representative's experience, councils typically do not have the capacity to plan effectively for MDH. Consents take a long time, and there can be an over-reliance on external consultants to process resource consents, which takes longer. Development engineers and transport planners are stretched in Auckland. No problem with capability.

Tools that councils typically use to plan for MDH include urban design guidelines and section 32 (Resource Management Act) analysis to inform policy decisions. Also structure planning processes can be used.

Local developers were thought to typically understand planning processes for MDH, although overseas investors usually did not. Current experts in MDH were considered to include the Todd Property Group, Fletchers and Fulton Hogan. Planning firms good at consenting included Woods, Harrison Grierson and Cato Bolam. These firms were considered to be experts because they specialise in MDH work, particularly surveying and consenting.

Ways to leverage expert knowledge were thought to include asking experts to present their findings at conferences and seminars, although consultants would likely need to be paid for their time. The NZPI could weight CPD points towards presenting at rather than just attending conferences. There are also issues around commercial advantage. Overall, it would be useful to convince people with knowledge to give up their time to share that knowledge.

Greater guidance is required from central government to deliver MDH. District plans provide some requirements, but better overall guidance is needed. Special housing areas (SHAs) haven't really been successful. The consenting process for SHAs isn't any quicker.

Planner 3

A specialist, planning and resource management consultancy based in Auckland. This firm undertakes private planning work for developers and government organisations. Extensive experience in large and small-scale MDH. Also works with builder partners to implement master plans.

Hobsonville Point (Auckland) is a good example of MDH. It is comprehensively planned and used a range of builder partners to add diversity. Having one owner contributed to the success of this development (no land fragmentation issues) as well as its desirable coastal location and the upswinging market at the time. Price points now make MDH more challenging than at the time Hobsonville was completed.

Planners are usually involved in the due diligence stage of an MDH development, when developers are trying to understand site yield and so on. Planners are sometimes involved before architects and identify opportunities and constraints and planning parameters for a site. Planners are then usually involved in the resource consent preapplication process (with councils), oversee any design changes required and coordinate specialist input to the resource consent process. Typically, planners' involvement ends at the granting of resource consent, although they can sometimes be involved afterwards if a variation to the resource consent is sought or to help developers interpret resource consent conditions.

Variations to MDH resource consents have been sought because the market is cooling and build costs are rising. Therefore, developers relook at design and value engineering and sometimes change the typologies approved in a resource consent (for example, from walk-up housing to terraced housing to reduce yield and build costs). Sometimes developers reduce the number of bedrooms approved for the same reasons.

Planners add immense value to the MDH delivery process. When involved early in the process, planners can provide strategic thinking to push the envelope and provide creative opportunities. Planners also add value through reporting and project management functions undertaken.

Council is currently struggling with resourcing, and experience levels of staff is also an issue. There can be delays with resource consents because of this. Generally, council has good people but high turnover. Tools that councils use to plan for MDH include the Unitary Plan, which is an enabling document. It zones for density and lets the market do the rest.

Generally, developers have a good understanding of planning constraints and the planning process as it relates to MDH. There are some challenges with interpretation of new rules in the Unitary Plan, which can be difficult for developers. There has been a move away from prescriptive rules to a more design-led focus, which is good for MDH.

In terms of experts in delivering MDH, it was thought that big, private companies can be considered as experts. Also builder partners from Hobsonville now have substantial intellectual property in delivering MDH. Common characteristics of these experts include experience (MDH can be complex with regard to fire, weathertightness requirements and so on) and an urban design approach.

MDH would benefit from standardisation of design (modularity brings down build costs) while ensuring diversity of the end product. Buildability is key.

In order to better delivery quality MDH, it was considered that:

- the building industry needs sufficient resources for builders
- better cost of building materials is required
- opportunities for standardisation of MDH design need to be realised
- mechanisms to aggregate land and achieve financial viability of developments is needed – for example, the Unitary Plan currently encourages density but the full development potential of sites is not realised as it is not viable to build 16 metre high buildings
- the community needs to be brought along on the journey
- ongoing education is required on the advantages of living in MDH
- good minimum standards are needed.

Builders

These interviews were conducted to ascertain how well the builder was constructing MDH. The aim was to investigate the issues faced by the builder and whether and how they were overcome. Most of those interviewed were based in Auckland.

Builder 1

The on-site project manager was interviewed. The project was for a 3-storey project with block wall garage basements. The work did not go well because six different house builders were subcontracted to build three units each on fixed price contracts. There were difficulties in coordination between what each contractor was doing. The plumbing and electrical work was from single firms, but inefficiencies in their work arose due to the builders being at different stages. The manager said he would recommend in future that a single commercial builder be used to manage and use their own labour for most of the work.

Builder 2

This is a large commercial builder doing a 3-storey, 25-unit project. They used commercial plant (fixed tower crane) and their own commercial construction team and

shared with other projects a person tasked full-time to obtain sufficient labour. The builder was also the developer, and timelines and expenditure were closely monitored.

Builder 3

The site manager's previous experience was in residential draughting and detached housing construction. The project was a 13-unit HNZC redevelopment site undertaken by a large group builder. Labour was contract only, and the turnover was quite high. The leading hand provided by the labour company was poor in tool skills and supervision, and the site manager did most of the supervision. He estimated that, with a more experienced crew, he could have completed the project in half the time. He indicated prefabricated cladding panels would have been useful on this project given the low level of skills, and he intends to investigate this for future projects.

Builder 4

A commercial construction company working on terraced housing and townhouses for a major private sector developer. The project was large – over 70 units – and the company had four site managers supervising contract-only labour. Low-rise is considered a good training ground for their young managers before they move on to medium and high-rise construction. They have imported a team of Philippine builders who have good skills. Due to delays in getting concrete inter-tenancy panels, they decided to pour their own for several units.

This company is also doing MDH up to 6-storeys, and they are typically invited by developers who they have previously worked with. They get involved in the design to ensure the problem areas are resolved early (façade structure interface and prefabrication where possible).

Builder 5

Like Builder 4, this is a large commercial company doing terraced housing but with HNZC. They also get involved at the design stage. The cladding design is important from their viewpoint for ease of construction but also long-term appearance and to reduce maintenance costs.

They employ as many apprentices as they can supervise because they believe it is a responsibility of large companies and they can share them with the commercial side of the business. They retain a mix of about 60% seniors and 40% juniors and promote their business to clients in terms of better quality and increasing the skill level in the industry. They use labour-only contractors for workload peaks but otherwise employ all their labour needs.

Builder 6

An industrial and commercial builder who is now doing MDH due to market demand. They employ mainly site managers rather than have their own labour. They do both terraced housing and apartments using house builders for the terraced housing and their own commercial builders for the apartments. They consider it important to have a strong site management presence and to take time and effort to build relationships with the trades.

Their contractual arrangements are an open-book payment basis with agreed rates for various activities. They also use the early contractor involvement method to get the best value for the client in the given market conditions. They are expecting to have a

long-term association with the client and believe this will work for social housing providers at a scale of at least 70 units per year for a 4-year period.

Their experience is that most builders struggle to operate efficiently on the larger terraced housing projects (they have problems with health and safety, access, site storage, tidiness and parking). This builder succeeds by imposing commercial construction methods where possible into terraced housing and low-rise apartments. For terraced housing, they use concrete inter-tenancy panels and timber framing elsewhere. For apartments, they prefer concrete frame and floor construction (from 2-stores upward) and prefabricated cladding panels using their own teams.

Councils

Council 1

A unitary council located in the North Island, this local authority processes a large number of building consents per year. It has experienced pressure as a result of the increasing amount of MDH development – particularly given the volume of consents and difficulty in securing staff with the necessary expertise (particularly consenting and construction monitoring experience).

The council representative believes that the current council system for dealing with MDH is not as efficient as it could be. There is a lack of understanding of the difference between MDH and single-dwelling development, and it is difficult to scale up to the more complex MDH work. More information is required now for building consents given liability issues.

Typically, this council finds that developers vary in their understanding of building consent requirements for MDH. Good developers tend to specialise in MDH, recognising it as a niche market to exploit commercially. They also see the benefits of process standardisation.

One obstacle that this council sees developers experiencing is knowing which subcontractors to use and having access to them. For example, façade design is very specialised, and while some façade design firms are good at understanding the council requirements, others are not. Developers are uncertain who the right people are to use on their projects.

Developers can also struggle with quality assurance (QA), as they think it is the council's responsibility rather than taking responsibility for QA themselves.

Council 1 is planning for more MDH in the future, as encouraging more intensive development is a major focus. This council also has a number of initiatives in place to improve their processes and relationships with the industry. This includes:

- a 'consenting made easy' project to change industry behaviour and ensure better alignment between council and the industry
- allocation of a dedicated council staff member to larger building consent applications to ensure continuity and guidance through the process
- a qualified partner programme to raise awareness of building consent requirements and standardise plans and processes – this group includes developers focused on MDH who meet monthly.

These initiatives are good, but it can be hard to secure council funding for them, as there needs to be a demonstrable return on investment to council.

The council representative thinks it is difficult to identify experts in overall MDH delivery, as some projects work well but others do not – even if the same people are involved. It is a fairly level playing field at the moment, although some specialised aspects of MDH do have experts, for example, Mott MacDonald have expertise in façade design.

What sets certain firms apart as experts includes experience and understanding what is required to demonstrate compliance in the New Zealand context. International firms often struggle without local experience.

Expert knowledge in MDH could be leveraged by working with MBIE to produce guidance material and identify what the requirements are. MBIE sometimes produces guidance but needs to focus on problem areas such as façade design. This would also be useful as different councils have different requirements, creating confusion amongst developers. MBIE could ensure consistency in this regard.

Other issues with MDH that this council sees as requiring resolution include better supervision of construction, more focus on end-to-end quality and the need for participants to take responsibility for the full MDH development process – not just parts of it. Joined-up processes are required and a robust QA system.

Council 2

This council is a territorial authority located in the North Island, which receives a high number of building consents per year. This includes some building consents for MDH but usually demand is for stand-alone dwellings, apartments and live/work units. Previously, the area had a strong focus on residential development, but the focus now is largely on commercial development.

This council needs more senior staff to process building consents. All councils are struggling to find staff with the required current competency and technical qualifications, and it takes 6–12 months to train someone up. MDH applications are complex, particularly with regard to fire separation and so on.

The quality of building consent applications received is currently very poor. Multiple requests for information (RFIs) are issued for MDH applications, often many more than one RFI per consent application. The group builders are OK, but others are not.

Architects and engineers need more training on the Building Code through the education system. Currently, the system is around the wrong way, with building consents being the ambulance at the bottom of the cliff. Issues should be resolved before projects reach the building consent stage.

Land development and consenting are the main obstacles for developers in completing quality MDH. There are also a number of separate requirements that make compliance complex (Building Act, Resource Management Act, district/city plans and so on).

Experts in MDH include group builders and retirement village developers. They are experts due to the volume of MDH they deliver and the standardisation of their processes. It will be difficult to leverage this expert knowledge though, due to commercial sensitivity.

It would help MDH delivery if district/city plans and infrastructure development codes are consistent. There should be base rules applicable across the country. There is also

a role for builders in city plan development and the resource consent process to ensure that issues are taken into account early before the building consent stage.

Council 3

This council is a territorial authority located in the South Island. The head of building consents believes that MDH is stuck between a rock and a hard place, as MDH is generally too small for commercial builders and too large for typical residential builders.

Issues encountered with MDH can include a lack of good project management and continuity during the construction stage, poor design and lack of knowledge about design for maintenance, fire/acoustic separation and post-fire construction stability. There are currently some large MDH projects kicking off. However, the costs of compliance are high with a number of failed inspections.

Overall, this council believes that its MDH consenting processes are OK but could be better. There is a need to increase skill sets around inspections and knowing up front who is doing the building work.

The quality of building consent applications is generally weak, and a number of RFIs are issued. There is a good vetting process in place, but this focuses on the existence of information rather than the quality of that information.

Obstacles for developers in completing quality MDH are thought to include time, poor advice at the start of the process, cost and a lack of certainty. This council has a scheme whereby developers can pay for a dedicated council staff member to guide their developments through council approval processes. This reduces the processing time of building consents.

This council plans for MDH, as there is a desire for density within the urban area. It doesn't get a lot of terraced housing but gets a lot of apartments or semi-detached housing. It would be helpful to look at MDH RFI data to identify commonalities.

It was thought that the industry could better delivery quality MDH by being organised and having dedicated project management, reviewing site licence classes to include MDH as originally intended and increasing knowledge and resources regarding MDH.

Industry organisations

Industry organisation 1

This industry organisation focuses on advocacy for their profession, education of members and collaboration across the building industry. The organisation representative believes that a good example of MDH is the Hobsonville Land Company, given that land was subdivided to suit the intended building typologies and used a range of designers. Hobsonville also did not have the challenges of land assembly (amalgamating sites) sometimes experienced by MDH owners and/or developers. There are also a number of good examples of local government social housing upgrades of existing MDH.

MDH is seen as a significant issue experienced by the profession represented by this industry organisation and is considered to be a pathway towards achieving the greater densities envisaged in the Auckland Unitary Plan. MDH has complex consenting and

compliance issues. This organisation recently completed a seminar series specifically on MDH.

Members of this industry organisation experience issues with the designer-contractor relationship when delivering MDH. Procurement can be tricky as well as project continuity (different people working on different parts of the project, with little oversight), meaning that there can be difficulties determining where liability sits. Product substitution can also be a problem.

Other MDH delivery issues include fire and acoustic regulations, with no or few accepted solutions for inter-tenancy fire walls and so on. Consistency of consenting can also be a problem (primarily building consents), given that different councils require different levels of information for consents.

When asked what role this organisation may play in improving the quality of MDH, the representative stated that greater collaboration is required across professions associated with the delivery of MDH, as one profession alone cannot deliver MDH. Also, industry organisations can play a role in advocacy and quickly upskilling their members on MDH-related matters. They run seminars that can be attended by anyone (not limited to their members only) and hold annual awards to promote best practice.

Experts in MDH were considered to include Architectus, Cheshire, Isthmus and Parsonson. What set them apart as experts is the fact that they work collaboratively and engage designers and contractors early.

Methods to leverage this expertise were thought to include site visits of successful developments, interviewing clients as a way of learning from hindsight and putting increased emphasis on product manufacturers to provide learning and upskilling opportunities.

The organisation representative believes that the industry could better deliver MDH by embedding design in the system – from the design (subdivision) of land to the design of buildings – and not just go for the cheapest option. Opportunities also exist to improve the Building Code and regulations to achieve better built outcomes. MBIE has room for improvement in dealing with the harder issues.

There are also too many regulations and requirements regarding MDH, and no one professional is likely to know and keep up to date with all of them. The complexity of MDH development is therefore a significant challenge to its delivery. The industry should also be pushed to think about all aspects of MDH development from design to durability and so on.

Industry organisation 2

This industry organisation has various members across the MDH delivery process including professions such as engineers, architects and manufacturers of housing materials.

The current focus of the Building Code on timber stand-alone homes is an issue experienced by members when working on MDH projects. The Building Code is not well geared to other typologies (such as MDH), and issues such as overheating are not addressed. Most developers build to Code so there are not many examples of best-practice MDH.

The industry could produce better-quality MDH through additional training specifically for MDH from the design community up. Roadblocks to quality MDH were thought to be cultural (historical preference for timber-framed houses) and inertia. Also, the Building Code needs to be toughened up.

This organisation has the potential to improve the quality of MDH through building rating systems, which are currently well used by medium and high-density housing projects.

Lessons can be learned from overseas in terms of leveraging expert knowledge to improve MDH. For example, the Zero Carbon Hub is an umbrella organisation in the UK that assists that government's trajectory to low carbon. This hub coordinates research and identifies challenges in the supply chain.

Overall, it was considered that standards (the Building Code) should be toughened up to ensure better-quality MDH. Also, standards should recognise other typologies. Training needs to be improved, and exemplar developments should be shared so that others can learn from them.

Industry organisation 3

This industry organisation delivers training and advocacy for its members and good-practice guidelines. The representative identified Hobsonville Point as a good example of MDH because of its scale and integration with surrounding land uses. Hobsonville also had a clear intention for MDH, and infrastructure was provided accordingly. Bespoke, well designed development is usually successful.

The majority of this organisation's members in urban areas may work on MDH projects but not within a wider national context. When working on MDH projects, members experience issues such as property amalgamation and managing neighbours for brownfield sites. For greenfield sites, there can be challenges between councils and developers, who often have competing visions and different ideas re urban design.

Industry is currently focused on tried and tested urban form so tends to churn out standard, low-density residential development. Need confidence to move into higher densities and different typologies and better integration with councils. It can be quite adversarial at the moment between councils and developers. MDH is also constrained by land fragmentation – need the ability to buy and amalgamate land parcels.

This organisation sees its role in improving MDH as setting good vision. There is too much focus on regulation right now. Rules are made too quickly, and grey spaces are treated as rules. More collaboration is required across the industry. Ways to leverage expert knowledge about MDH were thought to include more guidance (although this can stifle innovation), more industry panel discussions and more training.

Access to infrastructure and services can be a barrier to good MDH. MDH needs to time itself to market conditions and have the right socio-economic conditions to be successful. The current land use system incentivises building of the largest house possible on a single site, and this needs to change.