



**MDH/1**

# **Medium Density Housing Assessment Tools: Discovery Phase Working Paper**

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## About This Report

### **Title**

Medium Density Housing Assessment Tools: Discovery Phase Working Paper

### **Authors**

Verney Ryan, Beacon Pathway

Bill Smith, Beacon Pathway

### **Reviewer**

Andrea Blackmore, Beacon Pathway

### **Abstract**

This working paper reports on progress during the Discovery Phase of Beacon’s Medium Density Housing (MDH) research. The project is addressing the question “How is success of MDH measured at the individual development and neighbourhood level?” Work so far includes a review of existing literature, assessment tools and MDH guidance, drawing out themes and core principles on which to build a New Zealand-specific assessment. An Advisory Group has been formed and provided initial feedback on the approach and principles proposed. Key issues to be resolved and the next steps for the project are identified.

### **Reference**

Ryan, V. and Smith, B. (2016). Medium Density Housing Assessment Tools: Discovery Phase Working Paper. Report MDH/1 by Beacon Pathway.

### **Disclaimer**

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## 1 Executive summary

This report summarises learnings from the Discovery Phase of Beacon’s Medium Density Housing (MDH) research. The project addresses the question “*How is success of MDH measured at the individual development and neighbourhood level?*” with two sub-questions:

- 1) *What evaluation method is best suited for New Zealand to assess, measure, and target best practice in medium density communities?*
- 2) *What overseas tools are relevant to New Zealand, and what should be developed or adapted here that would provide a means to measure progress on key outcomes sought by government and industry in medium density communities?*

The Discovery Phase has encompassed: developing a research frame; reviewing national and international literature; assessing types and principles of MDH guidance and tools available; and from that, identifying a set of core principles/desired outcomes for an assessment tool. Alongside this work, an advisory group has been set up to test the proposed principles and raise issues to be considered.

Research so far confirms a gap in our current understanding of medium density housing; the needs and wants of residents and community members. More work needs to be done to understand these needs to make MDH more acceptable to potential residents and the neighbourhoods where they are situated. Assessments need to address not just the quality of design but also its outcomes, in terms of functionality, sustainability, liveability, and opportunities to contribute to community development. As a result, the team has identified end users as residents (homeowners and tenants), designers and developers, and communities, and is considering what each of these groups might need from a tool.

A review of relevant national and international literature and assessment tools dealing with medium density housing reveals varying emphasis by existing tools and research on three themes:

- 1) Building form and urban design - Technical in nature, with a design focus targeting building specifics (e.g. building materials and design characteristics), landscaping, and urban form
- 2) Residential dwelling specifications - Both technical and non-technical specifications relating to dwelling design, e.g. acoustic control, lighting, delineation of public and private space, position of on-site parking, and design and use of amenities
- 3) Community development - Qualitative appraisals relating to neighbourhood interaction, accessibility to key destinations, sense of place and community resilience

From the review, the team has developed a set of outcome-focused principles which will provide a framework for our target audiences to understand what makes medium density successful. Once finalised, these principles will help determine specific elements for assessment and allow for the further development of appropriate assessment tools. The project team envisages that each principle will have an associated set of assessment questions.

The suggested core principles are:

- Character, context and identity
- Resilience, adaptability, flexibility, robustness
- Connectivity
- Community interaction
- Quality design / liveability
- Environmental
- Healthy, safe and secure
- Housing choices

The team has determined that any tool should have these key attributes:

- Simple and easy to implement
- Measureable and objective
- Outcomes focused
- Straightforward (and inexpensive) to use
- Robust and reliable
- Simple and accessible language
- Not overly prescriptive
- Marketable with simple accreditation
- Involve a feedback loop and a mechanism for continual evolution

Feedback from the Advisory Group on the core principles and other issues in assessing MDH, as well as the literature review, has identified some higher level questions which need to be reviewed and resolved in the next phase of the project. These current key issues include:

- Striking a balance between users - not trying to accomplish too much, rendering it useless.
- Recognising that a tool cannot always value what counts, or count what is valued. Some approaches to scoring or ranking are likely to be more subjective than others
- Accommodating new or emerging typologies and considering flexible means to assess them (e.g. pocket neighbourhoods)
- Determining an appropriate scale and capability for any assessment approach
- Determining the extent to which any tool measures best practice or encourages better practice for smaller or less capable developers
- Not replicating existing tools and linking with existing tools and guidance, as well as with BRANZ and MBIE programmes and teams
- Considering how a new tool can enter the market, be promoted and accepted by the targeted users, and managing expectations amongst stakeholders and users

In addition, MBIE is keen that the project helps to identify issues relating to MDH that are not covered by the Building Code but should be included. A list of pertinent Building Code-related issues is being developed and explored as a key output for this project.

The project's next step is examining and identifying relevant tools as a means of developing a more detailed medium density quality assessment framework. The team has identified some examples of guidance and assessments that provide an effective mix of principles and approaches. These are:

- MfE's Medium-density Housing Case Study Assessment Methodology (2012)
- UK's Building for Life Programme and Built for Life tool (2012)
- MfE's Urban Design Protocols '7 C's'
- Beacon Pathway Neighbourhood Sustainability Framework (2008 – 2016)
- Local and central government advice and design guidance

## 2 Introduction

This report summarises learnings from the first of six phases of Beacon’s Medium Density Housing (MDH) research: Phase One - The Discovery Phase.

The project addresses the question highlighted under the Levy Prospectus *Programme 1: Giving industry the tools to deliver medium density housing that meets the needs of New Zealanders*, which asks “**How is success of MDH measured at the individual development and neighbourhood level?**”. Further to that question, two further sub-questions arise:

- 1) *What evaluation method is best suited for New Zealand to assess, measure and target best practice in medium density communities?*
- 2) *What overseas tools are relevant to New Zealand, and what should be developed or adapted here that would provide a means to measure progress on key outcomes sought by government and industry in medium density communities?*

The research **addresses a gap** in present knowledge and practices relating to the assessment of medium density housing and the tools that might best help deliver outcomes for medium density housing developments. Whilst previous work has been done in New Zealand and internationally to deliver design guidance of best practice, this will be the first time that a framework has been delivered to specifically assess *community* and *neighbourhood* aspects in medium density settings.

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## 3 Background

This research proposes to examine a range of ways to evaluate medium density housing in reference to specific desired community, design, and performance outcomes at the individual occupant level, building level, and neighbourhood level. Higher density development is needed to meet housing demand but is often poorly understood and resisted by the community.

Exemplars of best practice (noted from experience and anecdotal evidence) suggest that there is considerable potential to improve design, sustainability and functionality of medium density housing. This research will define a framework and develop a prototype tool (or tools) that can provide developers, designers, government, and industry with feedback that assists them to plan, design, and build future developments which are liveable, adaptable, sustainable, and healthy for residents, as well as being acceptable to surrounding neighbours.

Medium density housing (MDH) is a rapidly growing typology, particularly in the larger metropolitan areas of Auckland, and in growing urban centres such as Christchurch, Tauranga, and Wellington. MDH (and higher density housing) is estimated to account for as much as 60% of consents by dwelling unit<sup>1</sup> and is seen as a key part of the solution to solving Auckland's housing shortage and affordability problems.

Medium density development has something of a chequered history in New Zealand where, traditionally, people have aspired to live in detached houses on quarter acre blocks of land. There is resistance in many communities to higher densities because of fears that allowing this type of development may adversely impact house prices and neighbourhood feel. This has been compounded by the poor quality of many medium density developments, particularly in Auckland (medium density dwellings account for approximately 60-70% of dwellings in the Weathertight Services scheme)<sup>2</sup>. In addition to weathertightness problems, there have been reports of non-compliance with other clauses of the Building Code including fire, acoustics and structure<sup>3</sup>.

There is considerable activity underway amongst central and local government, research organisations, providers of affordable housing, and developers to understand what the market needs and the barriers to delivering MDH that meets these needs. These parties would also benefit from a framework to evaluate whether MDH being delivered, both now and in the future, is successfully meeting regulatory requirements as well as the needs and expectations of occupants and owners.

### 3.1 Identifying elements of a successful neighbourhood

The neighbourhood component of Beacon's research programme, which has been underway since 2004, has both researched and provided tools that help to guide the sustainable design, building, retrofitting, and management of neighbourhoods. Anchored in traditional triple bottom line sustainability, the research aims to maximise neighbourhoods' environmental, social and economic outcomes and mitigate the inevitable impacts of human settlement and human activities.

Research undertaken for the foundation of Beacon's programme of work in 2004/05<sup>4</sup> showed that neighbourhoods tend to work best when characterised by:

- Housing satisfaction – notably, housing satisfaction is also determined by neighbourhood satisfaction
- An acceptable physical appearance of the neighbourhood including low levels of dilapidation
- Safety in the street both from traffic and other people
- Low noise disturbance
- \_\_\_\_\_

<sup>1</sup> Based on MBIE dwelling consent figures

<sup>2</sup> MBIE (2016)

<sup>3</sup> MBIE (2016)

<sup>4</sup> For more detailed analysis see Beacon's Neighbourhood Sustainability Framework

[http://www.beaconpathway.co.nz/neighbourhoods/article/the\\_neighbourhood\\_sustainability\\_framework](http://www.beaconpathway.co.nz/neighbourhoods/article/the_neighbourhood_sustainability_framework)

- Access to facilities and services
- Access to other sites in the settlement system
- Manageable cost of both residence in the neighbourhood and in connecting to other parts of the city system
- Ability to have pleasant, friendly and non-threatening casual social relations
- Ability to provide opportunities for neighbourhood action on local issues
- Low tenure mix.

Taking account of international findings, early Beacon research concluded that the critical sustainability issues affecting, and affected by, the built environment areas are as follows:

- **The motor vehicle.** Greenhouse gas emissions, stormwater pollution and air pollution are caused by vehicle emissions. Time spent travelling in motor vehicles has significant social and economic costs, and presents the second highest direct costs to households. Those unable or unwilling to drive are at risk of social exclusion and marginalisation. Walking is associated with neighbourhood interaction and increased informal surveillance. Neighbourhood form impacts on both motor vehicle use and walking.
- **The quality and nature of public space.** Public space can generate interaction, provide local natural habitats, act as stormwater mechanisms, increase walking and provide for creative and physical activities. Design quality of public space is key to achieving these and other desirable outcomes.
- **Flexibility and adaptability.** Robust neighbourhoods stand the test of time, thereby avoiding neighbourhood decline and the associated social and economic costs. Key ways to ensure flexibility and adaptability include a mix of building typology and dwelling size, mixed use, local facilities and the availability of public transport.
- **Higher density.** Density intensification can reduce sprawl, reduce the amount of land that is taken out of natural ecosystems, generate population critical mass, affect travel and neighbourhood behaviours. Higher density therefore improves the viability of town centres and public transport and directly affects travel behaviour.

This foundational exploration forms the basis of thinking behind the development of a refined tool that examines how medium density housing can meet residential requirements and enhance neighbourhood and community sustainability.



### 3.2 Addressing the research ‘gap’

Whilst previous work has been done in New Zealand and overseas to identify best practice in MDH design, work during this discovery phase has reconfirmed our original hypothesis; that a gap exists in New Zealand in the way we currently understand medium density housing with regards to **resident** and **neighbourhood** aspects.

This gap has been highlighted during our literature review, including in a recent study from the UK<sup>5</sup> which concluded that:

*“One of the most interesting findings was the clear view that public consultation was an effective means of developing an appropriate and relevant sustainable community tool, despite this being in fact a very little used approach by existing tools, guides and methodologies. It may well be that this is a significant gap in the market...”*

There is an identified need to assess not just the quality of design but also its outcomes, in terms of functionality, sustainability, liveability, and also opportunities to contribute to community development. In some instances, tools and guidance have been developed to assess these wider community aspects, but this is usually at a master planned scale for larger developments (e.g. the UK’s BREEAM Communities tool<sup>6</sup> or the US’s Living Communities Challenge<sup>7</sup> which assess large scale communities of hundreds of houses in mixed use settings). In practice, the voice of the individual, as a potential resident or existing community member, is largely absent.

Closer to home, the desire to engage more readily with local residents is highlighted in a recent CHRANZ report (2011) which noted that:

*“Published guidelines aimed at encouraging more intensive residential development focus on design and quality issues. They tend to be design - rather than demand-centric, and cover the arrangement and aesthetics of development and the design of housing rather than reflecting housing needs and expectations. Hence, guidelines to medium density housing used in New Zealand and elsewhere tend to focus on type of structure and building form, reflecting the input and perhaps even the preferences of designers rather than residents. They present a professional rather than market-oriented view of the qualities that contribute to desirable – or acceptable – dwellings of different densities”<sup>8</sup>*

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<sup>5</sup> Ismail et al (2012)

<sup>6</sup> BREEAM Communities tool (2012 see <http://www.breeam.com/communities>)

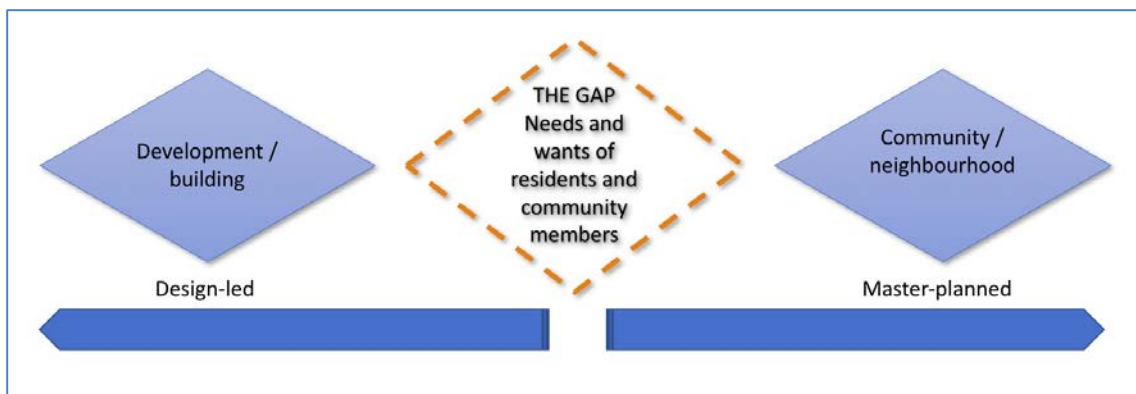
<sup>7</sup> Living Communities Challenge (2015) – see <https://living-future.org>

<sup>8</sup> CityScope Consultants for CHRANZ (2011)

Alongside this, a number of challenges to medium density housing have been identified. The Auckland Regional Growth Strategy in 2005 noted that:

*“intensified housing is associated with poor quality design and low amenity. ... poor quality construction; concern about long-term maintenance; poor layout; insufficient space; and lack of integration with surroundings”<sup>9</sup>*

These elements suggest that more work needs to be done to make MDH more acceptable to potential residents and the neighbourhoods where they are situated.



**Figure 1: The gap in current housing assessment**

This recognition of the need for *acceptance* provides an overarching concept to address *the gap* identified above and suggests a resident or people centred approach. By understanding how residents respond to a medium density setting, we can design dwellings and communities that align to their needs while also incorporating existing best practice relating to more sustainable and efficient design.

<sup>9</sup> *Syme et al, 2005 as cited in CHRANZ (2011).*

## 4 Discovery Phase

### 4.1 Methodology

This first phase of the research utilised a broad desktop review of relevant literature to develop an understanding of key medium density housing concepts in the New Zealand context, and also explore a sample of relevant tools and frameworks currently in development or available in the market. This analysis confirmed the research gap (identified above) and help identify a number of core principles that ensure that any new tool to address this gap remains firmly aligned with existing good practice.

The Discovery Phase included the following:

- Development of the overall research frame
- Investigation of key national and international literature relating to medium density housing and assessment tools
- Assessment of the types of medium density guidance available in New Zealand and overseas
- Assessment of a variety of housing and development assessment tools categorised by their outcomes as they relate to:
  - building design
  - residents' requirements
  - community and sustainability
- Identification of core principles and outcomes of good practice based on themes that were prevalent across the guidance and tools on offer
- Development of a reference advisory group to advise and inform the project (see Section 4.3 Technical Advisory (TARGET) Group )
- Testing of themes, principles and outcomes with the advisory group.

### 4.2 Emerging themes

The Beacon literature review coincides with related work currently underway at BRANZ. This aims to identify key aspects of medium density housing and clarify issues and opportunities in the New Zealand context. The Beacon project does not seek to replicate this work but, rather, gain specific insights from the literature relating to the assessment of medium density housing developments.

Overarching issues that set the context for this review include recognition that:

- Medium density developments are continually evolving in New Zealand both in terms of scale and typologies.
- Increasing population growth has led to predictions that medium density development will increase as a design form in areas such as Auckland, Tauranga and Christchurch.
- There has been a history of poorly designed and constructed medium density housing (including a significant number of leaky buildings). These have tarnished the image of

medium density developments, both for residents wishing to live in this type of housing, as well as for the communities that will be intensified through development.

- Successful medium density developments, where they do exist, take account of a wide variety of issues, including the neighbourhood character, context and identity, public-private interfaces, site specifics such as topography, views, aesthetics, security, landscaping as well as practicalities such as car parking and waste collection.
- A small number of useful assessment type tools are available in the New Zealand context but they have not been widely used or taken up by industry, and the residents/and or community voice is largely absent.

With these factors in mind, the literature review undertaken as part of the Discovery Phase has been wide ranging in its scope, and has covered both national and international guidance, as well as principles, protocols and assessment tools. Key themes, relevant to this research, which have emerged from the literature, are summarised below.

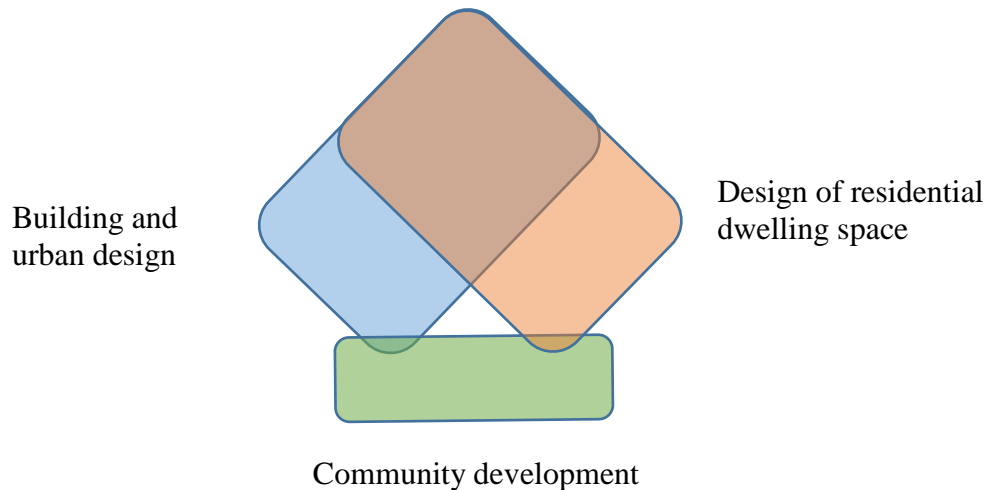
#### **4.2.1 Principles of good design**

A wide range of guidance and assessment tools explicitly state core principles highlighting what they consider ‘good’ design to be. Where these are not stated, principles or concepts are often implicit in the documentation, presented as expected or required outcomes. These principles range widely in their scope depending on the emphasis of a particular approach which may include any combination of the following three factors:

- 1) Building form and urban design  
*Technical in nature, with a design focus targeting building specifics (e.g. building materials and design characteristics) landscaping and urban form*
- 2) Residential dwelling specifications  
*Both technical and non-technical specifications relating to dwelling design, e.g. acoustic control, lighting, delineation of public and private space, position of on-site parking and design and use of amenities*
- 3) Community development  
*Qualitative appraisals relating to neighbourhood interaction, accessibility to key destinations, sense of place and community resilience*

As a result, principles and their related assessment criteria can include both prescriptive outcomes (defining appropriate sizes and layouts of dwellings, exterior characteristics, or positions of car parking) and subjective measurements (e.g. offering a score or ranking based a perceived extent of accessibility or community integration). The review identified a wide range of these outcomes and has classified them with direct relation to MDH. A summary of these is presented as ‘core principles’ in Section 5 Development of core principles and provides a key component for the next stage of project development.

While the principles provide an overarching framework, the outcomes that they determine bring us back to the three main themes outlined above and the remainder of this section summarises how these are addressed in the literature.



**Figure 2: Diagram illustrating interaction of emerging themes**

The above diagram illustrates these three factors and their prevalence in the literature represented conceptually by their relative size.

As shown, much of the literature covers the specifics of building design with a similar amount of attention provided to residential specifications and, often, a strong overlap between these two aspects. Elements relating to community development are referred to in building and residential-led guidance. However, they often directly relate to design objectives, such as the provision of adequate public space or specifications to integrate boundaries with street scene. Broader aspects, for example, consideration of demographics of existing or prospective residents, governance issues, or opportunities to enhance neighbourhood interaction or build community resilience are less prevalent, and approaches that emphasise these tend to be presented from a deeper green or ecological perspective.

A summary of these themes is provided below.

#### **4.2.2 Building, urban and residential design factors**

Design-based factors include:

- Descriptions of building typologies and recommendations with regard to types and visual impact
- References to building code requirements (either local or national)
- Building and landscaping specifications relating to orientation, dimension and layout
- Lifecycle considerations relating to the sustainable use of materials

- Technical specifications relating to dwelling design can be wide ranging including floor space ratios, recommended configuration, lighting, acoustic privacy, ventilation private space
- Car access and parking configurations
- Access considerations including entry ways, linkages to streets
- Reference to connectivity with key destinations and amenities while recognising that this is something that smaller developments are likely to have little or no control over
- Design considerations for energy efficiency and waste management

It may be over-simplistic to suggest that design-oriented approaches assume that good design in itself will lead to good communities. However, much of this guidance does not consider active or ongoing measures to support residents as they move into a new development and become part of the neighbourhood. The focus on technical aspects may also act as a barrier to residents and community members trying to understand if their specific requirements are likely to be met by a particular design.

That said, the technical guidance that is available is generally of very high quality, meeting the specific needs of an intended audience who is well versed in the theory and practice of building and urban design. As Section 5 Development of core principles suggests, much of this design-oriented literature stems from similar core principles and therefore confirms what ‘good design’ is aiming to achieve. With such a wealth of material covering all aspects of design, the question remains as to how much should be included in a MDH assessment tool.

### **4.2.3 Community factors**

Community-oriented factors include the following considerations:

- Understand community and neighbourhood context including demographics of the existing population
- Recognition that the community context and accessible key destinations are likely to appeal to residents at different life stages and therefore affect those who want to live there.
- Consider placemaking and community development as an ongoing process beyond the initial design
- Account for changing life-stages, recognising that private spaces may need to be personalised and transformed based on a residents changing needs over time
- Emphasise a mix in housing development to create a diverse community and wider social interaction
- Consider building governance issues that provide for, and regulate the use of, public space
- Are proactive in encouraging social and cultural interaction
- Emphasise active and shared forms of transport over car use, providing facilities to encourage healthy lifestyles
- More explicitly state environmental and sustainable goals and outcomes, including some prescriptions for use of materials and design of energy, transport, recycling and waste systems

- Consider the role of technology and future advancements, including future opportunities for shared power generation, sharing transport and water harvesting
- Highlight issues relating to safety and security, including passive surveillance in and around the building, and between the building and local amenities
- Identify opportunities where developments can enhance existing communities
- Include carbon accounting or mitigation strategies
- Consider opportunities for resident and community input and feedback to encourage continual improvement.

Literature that highlights these factors often includes design elements, although it may use less technical terminology. In these cases, the language is, therefore, more familiar to residents and (non-professional) individuals; however, the qualitative nature of some of the eco-centred approaches may be difficult or even off-putting for developers and builders.

#### **4.2.4 Integrating factors**

Based on the review, the Beacon team has identified some examples of guidance and assessments that provide an effective mix of the above factors which will be useful in developing a framework approach for MDH. These are noted in section 7.4 Next steps and include local, national, and international work on MDH principles, design and community development as well as Beacon's own neighbourhood sustainability framework.

### **4.3 Technical Advisory (TARGET) Group**

For any new tool to be accepted and used, it is essential that it is relevant, robust, and well informed, and that it understands and meet end users' requirements. For this reason, a technical advisory group has been formed early, during the project's Discovery Phase.

The key role of the TARGET (Technical Advisory Group – External Team) Group is to keep the project focussed and grounded in the context of medium density housing in New Zealand, and to ensure that the needs of the design and building industry, the residents, and the wider community are being met.

The TARGET Group has been set up to provide the following high level inputs to the work programme:

- Guiding the strategic direction of the project so that it remains relevant to the sector and the community
- Providing expert information and advice where appropriate (e.g. specific design advice)
- Providing access to feedback on building developments from residents and the wider community
- Ensuring that the developing framework and prototype tools are integrated into current work programmes (e.g. BRANZ and MBIE's MDH programmes).



- Advising on trends, activities and thinking in the sector to ensure the programme focusses on the right priorities, compliments other work in the sector, and adds value.
- Providing relevant stakeholder views to help ensure that any prototype tool(s) are well received, understood and accepted by the groups and individuals who may use them.

#### 4.3.1 **TARGET Group membership**

A wide and representative body of organisations have been invited to be members of the TARGET Group. This includes individuals from industry, government, local government and research organisations. At the current time, membership includes the following representatives at an organisational level:

- |                    |  |
|--------------------|--|
| ■ Auckland Council | ■ Hobsonville Land Company                               |
| ■ Beacon Pathway   | ■ Housing New Zealand Corporation                        |
| ■ Boffa Miskell    | ■ Jasmax   |
| ■ BRANZ            | ■ Ministry of Business, Innovation and Employment (MBIE) |
| ■ Fletcher Living  | ■ Ockham Residential                                     |
| ■ Generation Zero  |  |

## 4.4 Typologies, scale and definitions

Parallel to the Discovery Phase of this research project, BRANZ is undertaking a desktop literature review of medium density housing as well as looking at the most appropriate definition of ‘medium density’ within the New Zealand context. At the time of writing, the results from these two pieces of work have not been available as an input to the Beacon research, but several discussions with the BRANZ team have contributed to our understanding of what constitutes medium density.

In summary, it is notable that there are many different approaches to the definition of MDH. Some argue strongly for a dwellings-per-hectare approach, others for metrics that enable a calculation of population (people per hectare), and still others for a minimum site coverage or number of storeys definition. A widely-accepted definition from the current literature comes from Ministry for the Environment<sup>10</sup> work and includes the following:

*“Medium-density housing means comprehensive developments including four or more dwellings with an average density of less than 350 m<sup>2</sup> per unit. It can include stand-alone dwellings, semi-detached (or duplex) dwellings, terraced housing or apartments within a building of four storeys or less. These can be located on either single or aggregated sites, or as part of larger master-planned developments.”*

However, this is quite defined in its terminology, and, despite being widely used, the Beacon project team questions the potential for exclusion should this definition be rigorously adhered to.

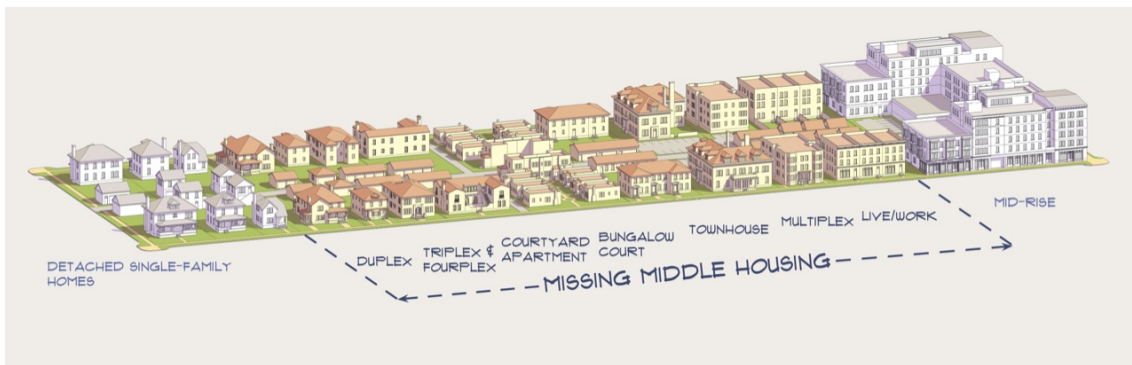
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<sup>10</sup> <http://www.mfe.govt.nz/more/towns-and-cities/medium-density-housing>



For example, a ‘tightly’ developed, three-unit set of character flats or a five storey apartment complex which devoted an entire floor to communal (or commercial) space would fail to meet this definition.

A recent concept that is gaining traction, both in New Zealand and internationally, is the idea of the ‘missing middle housing’. The term “Missing Middle” was coined by Daniel Parolek of Opticos Design, Inc. in 2010. It was used to define a range of multi-unit or clustered housing types compatible in scale with single-family homes that help meet the growing demand for walkable urban living in the context of North American suburban and city development. Both diagrammatically and conceptually, it is a useful reference in the development of definition of medium density housing within the New Zealand context.



SOURCE: © 2015 Opticos Design, Inc

**Figure 3: Missing middle housing**

Ideally, and as the above diagram shows, an effective assessment tool would be able to assess the quality and success of medium density development whether it was a row of 1 storey terrace houses or a 5 storey apartment building, or a bungalow court or pocket neighbourhood. Hence, the project team are currently working with and evaluating a range of definitions, and are remaining open to the ability of a suitable tool to be used in a wide spectrum of different medium density settings.

In addition to reviewing definitions, the team have also been considering the practical application of an MDH assessment tool. Despite the large number of newer master planned developments underway in the Auckland region (e.g. Hobsonville Point, Three Kings), there appears to be considerable benefit for an assessment approach that accommodates infill housing which may be relatively minor in scale. This could include (for example) a four-unit apartment complex on a large section which, while small, will nonetheless have implications for neighbourhood development and also impact on residents living nearby.

For these reasons, no single prescriptive definition of the term ‘medium density’ has been chosen – at least in this early phase of the research - and the Beacon team have kept an open mind as far as both typology and scale of medium density are concerned.

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## 5 Development of core principles

The use of principles, guidelines and protocols is prevalent throughout the design literature at all scales of household, as well as master and community planning. The presentation of these founding concepts provides a frame of reference and a context that helps describe the outcomes of good design; that is, what good design could/should achieve. Used well, they can also help provide a shared language, understandable to all those that have a stake in the planning and building of **high quality** medium density housing:

- Developers / designers / planners and builders
- Individuals and residents
- Surrounding community – neighbours and organisations

The list of ‘core principles’ in Table 1 below has been collated based on an ongoing review of relevant national and international literature dealing with medium density housing, as well as several popular assessment tools in use both here and overseas<sup>11</sup>. Categorisation is often challenging as many documents are intended either for developers or for communities, and seldom for potential residents. As such, their language can be quite technical or quite general, and many principles appear to overlap or, indeed, elements within each sub-section may be pertinent to other sections.

With this in mind, the objective is to develop a set of *outcome-focussed* principles which will provide a framework for our target audiences to understand what makes medium density successful. Once finalised, these principles will help determine specific elements for assessment and allow for the further development of appropriate assessment tools.

The project team envisages that each principle will have an associated set of assessment questions. For example, a question under the character/identity principle may be ‘*How does the development utilise local materials and/or features to create a unique sense of place?*’ Aligned questions could then be developed for residents and the wider community to determine if they feel that a unique sense of place will be/has been established.

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<sup>11</sup> Tools have included Beacon Pathway Observational and Resident Self Report Tools, Boffa Miskell (MfE) Medium Density Assessment Methodology, BREEAM Communities (BRE), LEED ND (GBCUSA), UK Built for Life 12 (Design Council UK), Trowers and Hamlins Good Development Guidelines (Oxford Brookes), MfE Urban Design Protocol 7 C’s of good design, GBCA Communities Tool

**Table 1: Core Outcome-Focussed Principles (DRAFT)**

Outcome Principle Categories	Description / keywords	Considerations
<b>Character, context and identity,</b>	Sense of place, place-making, defining boundaries, culture, legibility, heritage, artworks, landscaping, materials, vernacular (drawing on local character), Maori urban design principles (potential to include)	<ul style="list-style-type: none"> <li>▪ How would this apply to a smaller scale development</li> <li>▪ How do we get across the concept of a word like <i>place-making</i> or <i>legibility</i> to residents?</li> </ul>
<b>Resilience, Adaptability, Flexibility, Robustness</b>	Physical adaptability and life-stage / demographic change (lifetime design). Responsive to social, technological and environmental change at individual and the building level, climate change adaptability, flexibility of use / space	<ul style="list-style-type: none"> <li>▪ Could this be merged with environment and sustainability?</li> <li>▪ One of the challenges is simplifying the language (avoiding jargon like ‘robustness’) – what level should this be pitched at?</li> </ul>
<b>Connectivity,</b>	Walkability, cycling / active travel, access to local amenities and other key destinations, public transport, permeability, way finding, integration into existing neighbourhood. Determining where people want to go and how to get there	<ul style="list-style-type: none"> <li>▪ Should we be explicitly encouraging people away from private car transport?</li> <li>▪ How does the assessment reflect the ability of the developer / development to affect these outcomes? (e.g. no public transport – not the developers fault but need to be measured as to success or failure of development to address)</li> <li>▪ How are these factors affected by scale?</li> </ul>
<b>Community Interaction</b>	Daily social interaction, bumping places, communal spaces, public - private realm, engaging the community in civic life, governance / maintenance of shared/public spaces and common areas, clubs and social networks.	<ul style="list-style-type: none"> <li>▪ How do we assess whether residents are engaged in civic life?</li> <li>▪ What scale is appropriate (e.g. three-unit infill housing development – can it contribute to civic life)?</li> <li>▪ To what extent should local clubs and social networks be investigated and who could be expected to do that?</li> </ul>
<b>Quality Design / liveability</b>	Layout, internal layout, orientation, sunlight / daylight, ventilation and moisture control, thermal performance, functional design of living and public spaces, privacy, noise (external / internal), private space useability, Kiwi lifestyle, storage (internal - external [bins recycling] - hobby), parking, aesthetics, building form and appearance, open space. Accommodating life stages and mobility needs	<ul style="list-style-type: none"> <li>▪ What is the scope of the design parameters – how detailed, how prescriptive... ?</li> <li>▪ And given that there is already lots of good practice - is assessment against specific design principles too prescriptive? Or better designed by asking e.g. ‘is it quiet?’ or ‘how has external noise been dealt with?’ rather than ‘what sort of acoustic isolation has been used between dwellings?’.</li> <li>▪ With the above in mind, how do we overcome technical language to enable all audiences to understand and engage with these outcomes?</li> <li>▪ Is there opportunity for linkages to existing large quantity of good technical design practice (already developed)?</li> </ul>

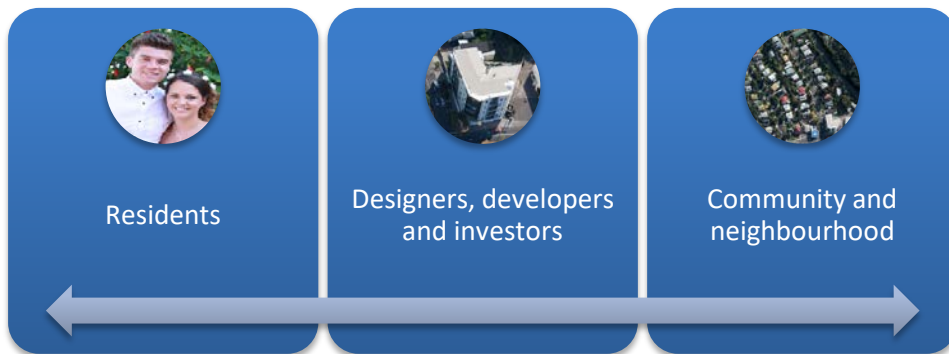
<b>Environmental</b>	Sustainability, energy, water, resource use, waste, low carbon, technological advancement/innovation, shared resource use (car sharing schemes etc.), building materials and life cycle design, building reuse, durability and maintenance, wildlife habitats, biodiversity, green and blue infrastructure	<ul style="list-style-type: none"> <li>▪ Potential to link in or combine with resilience?</li> <li>▪ Should this assessment tool utilise Homestar and Lifemark as a framework for individual assessment of dwellings? E.g. has the development been Homestar rated and what rating do the dwellings achieve?</li> <li>▪ Does an assessment that relies on other assessment tools become too unwieldy/expensive/time consuming?</li> <li>▪ Should this look at neighbourhood scale generation and energy, water and food provision?</li> <li>▪ Is sustainability an off-putting term – what language should we be using?</li> </ul>
<b>Healthy, safe and secure</b>	Safe travel between destinations and safety in your own home, CPTED, IPTED, passive surveillance, lighting, encouraging healthy lifestyles by design (e.g. secure cycle storage, bike repair etc.)	<ul style="list-style-type: none"> <li>▪ Should these be integrated throughout the other areas (as a core function of good development) or is it worthwhile having as a separate section? – for example could passive surveillance and security become part of community interaction / could lighting be part of connectivity etc..</li> </ul>
<b>Housing choices</b>	Tenure, affordability, typology, dwelling mix, demographics, financing (buy to let / starter homes), services/facilities for target users (e.g. teens, children, elderly)	<ul style="list-style-type: none"> <li>▪ Should the tools be explicitly seeking to provide for a range of life styles and life stages through a range of appropriate dwelling mix, including sizes, affordability, tenure and layout?</li> </ul>

## 6 Discussion

At this early Discovery Phase, it is inevitable that initial considerations raise more questions than answers. Specifically, the Beacon team has noted a range of issues relating to the types, scale, and nature of medium density that could be assessed. In addition, the team is currently determining the potential stakeholders who might benefit from using the assessment tools. For example could such a tool assist potential residents to find a suitable place to live or help a community accept that a development will be well-integrated into the existing neighbourhood? Further considerations relate to the timing of any assessment (e.g. at the design stage or post-occupancy). These questions will be further evaluated as the research progresses; however, early considerations are presented here as an indication of developing themes.

### 6.1 Who would benefit and use the tools?

Three main users have been identified who may benefit from an MDH assessment tool:



**Figure 4: The spectrum of potential users of a relevant medium density assessment tool(s)**

Each of these potential audiences has specific needs and wants.

**Table 2: Audiences, Benefits and Outcomes**

Potential audience	Sub group	Potential benefits	Objective and outcome
<b>Residents – homeowners and tenants</b>	Those looking for better developments and places to live	<ul style="list-style-type: none"> <li>▪ Helps to improve understanding of local area, amenities, key destinations and transport connections</li> <li>▪ Determines quality of build and considerations relating to key concerns e.g. safety, security, public private interface, onsite amenities, parking and potential to personalise the property and transform it over time.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Educates and informs on current neighbourhood and suitability for residents current life stage</li> <li>▪ Provides reassurance of quality</li> </ul>
	Existing residents	<ul style="list-style-type: none"> <li>▪ Provide feedback on the property post occupancy</li> </ul>	<ul style="list-style-type: none"> <li>▪ Establishes the building/complex as a quality development</li> <li>▪ Feedback contributes to the reputation, robustness and on-going development of the tool.</li> </ul>
<b>Designers and developers</b>	Developers	<ul style="list-style-type: none"> <li>▪ Helps understand the existing neighbourhood / community</li> <li>▪ Identifies local amenities, key destinations and transport options</li> <li>▪ Helps determine residents that would and could live there</li> <li>▪ Maintains design standards with direct reference to residents’ needs and wants.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identifies residents’ concerns</li> <li>▪ Ensures integration</li> <li>▪ Matches supply to demand</li> <li>▪ Identifies opportunities to contribute to wider community development</li> <li>▪ Post occupancy resident feedback assists with future contracts and helps establish quality of developer</li> <li>▪ Additional certification associated with the use of the tool helps build the reputation of the developer</li> </ul>
	Investors	<ul style="list-style-type: none"> <li>▪ Understanding of neighbourhood and potential residents who might live there</li> </ul>	<ul style="list-style-type: none"> <li>▪ Confirms quality of the development and its marketability</li> </ul>

<b>Communities</b>	Residents living in surrounding area	<ul style="list-style-type: none"> <li>▪ Helps communities determine how any new development will integrate with the existing character</li> </ul>	<ul style="list-style-type: none"> <li>▪ Educates and informs</li> <li>▪ Increases acceptance of medium density</li> <li>▪ Provides assurance of quality development</li> <li>▪ Identifies potential areas for how the new development can support / enhance an existing community</li> </ul>
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## 6.2 Key themes from the Advisory Group discussion

On 1 December 2016 the project team held a workshop with the TARGET Group. The intention was to introduce the project and test/peer review core aspects of the research, current thinking as well as to showcase the developing core principles. The research was well received and the overall approach to the developing framework and tool(s) confirmed. There was considerable discussion about the ‘gap’ identified in current assessment methodologies and this appeared to have resonance. A useful set of findings resulted from the broad discussion including the following key points:

### 6.2.1 Tool scope, target audience and key features

- The tool might be more useful for small projects in existing communities helping to identify what it’s reasonable to do, as it’s not possible to do it all. There is a noticeable gap for these smaller developments but will need to be careful about how scale is defined.
- There is a recognised need to change (many) developers’ mind-sets and help them to realise that they can deliver more (better quality) than they currently are. The project will need to be clear about the type of developer targeted and the scale of development that can be targeted /accommodated.
- Consideration of greenfield developments will also be important (e.g. large blocks being developed between Albany and Warkworth). These developments will all go through a formal structure plan process, but this only defines them to a certain point. Is a tool useful at this level? Perhaps a focus on smaller scale projects is more important as they may need more support/guidance.
- (Some) developers would be interested in a tool that allows them to learn from one project and apply it to the next; feedback from residents gives an opportunity to achieve this.
- Many design elements (e.g. stormwater treatment) are already identified in legislation which shapes core elements of any development. It may be more useful to leave those elements to existing good practice guides and legislation and instead focus on other aspects that are not covered.
- There is a tension between being prescriptive verses flexibility. Flexibility is considered more important; any tool/guidance needs to be straight forward, easy, and accessible. Where prescriptive advice is required, this is usually already covered by legislation and best practice design guides.



- There is a need to identify aspects of design and guidance that are already being implemented and assessed / policed satisfactorily. Unless the developing tool can improve on how these features are currently dealt with, they should be left alone.
- Consideration should be given to the different types of developers in relation to land developers (with a focus on footprints and subdivision) and building developers (focusing on design), and consider how the right people can be involved in early stages to influence outcomes. Need to recognise the mix here including developers of the land, of the site, as short or long term investors, and as building owners.
- Consideration needs to also be given to owner-developers / owner-led communal projects that cut out the developer. Any tool could link to guidance and further educational material, e.g. for many people, it would be helpful to have a brochure about key aspects to consider when buying an apartment.
- The overall size of the tool/document should be a consideration, as well as the size of any guidelines they link into. Tool should be aimed at an overview level, with development of common language for targeted stakeholders.
- Keep the framework and developing tool(s) manageable and able to be practically implemented
- Understand the range of developer types out there – the good, the bad and the ugly.
- Focus for the tool will be important. There was broad agreement that the tool is not trying to stop the worst (minimum standard), but trying to lift the overall standard.
- See residents as a key audience / driver for reviewing principles ('users' of medium density help to shape what they value and want/need)

### **6.2.2 Design considerations**

- Another aspect to consider is the design process and the different ways developments are being delivered. Most are not designed by architects and some come out of pattern books. Many developers appear to be seeking to maximize size and have poor understanding of outcomes. It would be useful to have a process or tool to help work through problems, issues and identify opportunities (e.g. provision of communal car parking).
- Some prescriptive rules can box designers into a corner, where they are pushed towards making a less than optimal decision (i.e., minimum size balconies where they may not be appropriate). This type of community outcomes-driven tool is more complex than Homestar™. How do you facilitate good judgment?

### **6.2.3 Community / neighbourhood issues**

- There is a need to understand the sort of activities that a developing neighbourhood requires and, therefore, it is important to understand the context of each project with a focus on providing what is missing. It would be valuable to have a tool that helps to tease out what a project is adding to any given community (e.g. amenity, access to services, greater density to support public transport etc.).
- Balancing commercial imperatives and delivering quality neighbourhoods is challenging for developers. They are looking for more tools to help them when it comes to marketing



neighbourhood aspects of their developments, as well as tools that will assist them with engagement of the community.

#### **6.2.4 Case studies**

- Explore a wider range of case studies to test and refine the approach – specifically some bad/poor examples may be useful to test against
- Developments that aren't considered as 'good' should be evaluated as part of the case frame. There is the danger of a group of 'experts' sitting around the table and thinking they know what is good, when the reality of people's experience might be quite different.
- A tension exists between internal and external perceptions of developments. It would be useful to have some examples (case studies) where residents have been there for a long time, so they've had time to get over the things that initially annoy them and settle in. Also for residents to have time to develop a sense of community.

#### **6.2.5 Other issues**

- Part of what's needed is 'story telling' and communications. Information / knowledge exists, but there needs to be a means to disseminate it. The story telling needs to provide a context, both about what good development is and how a particular development fits with that idea of 'good'.
- Input from the banking sector is considered important as they have considerable influence through the process of lending to buyers and developers. A mechanism to tie the outcome of the tool to the banks would be helpful in terms of education, especially in relation to long term investment. Are valuers and/or financial institutions placing as much value on neighbourhood and community as they should? There is an opportunity to educate banks and investors about where they are putting their money.
- Incorporating mixed use into social housing is challenging. There are issues around the compatibility of businesses given the characteristics of tenants. Getting the right mix of commercial (compatible businesses) to match tenants' requirements is crucial.
- Industry does struggle with how to deal with vehicles, especially as there is still no incentive under traditional planning frameworks and a lack of acceptance of separating people from cars. However, technology is fast changing (the advent of Uber, car share schemes and even driverless cars) and any developing tool needs to retain considerable flexibility to deal with this (e.g. decoupling units from the car is unusual but can be effective as it enables more flexibility in design and parking can be repurposed later on)
- Much comes down to the extent to which developers understand the neighbourhood context and demographics etc. so a tool that helps draw this out (and inform developers as well as local residents/community) is seen as useful.
- 'Marketability' is an important aspect that is often overlooked, including who can and will live in a particular location and the potential for transformation of a development overtime for 'resale'.
- The definition and use of the term 'affordable' in relation to dwellings raises a number of issues and should be treated carefully.

## 7 Conclusions and next steps

### 7.1 Key issues

Taken together, the research to date has confirmed a significant gap in existing assessment tools and has determined a way forward for integrating resident and community aspects with guidance on good design practice for medium density housing in New Zealand. This approach relies on understanding the features that enable an assessment tool be of value to all potential audiences so that developers, residents and wider community members can benefit from its use. It is considered that such a tool will be of most use if it is outcome driven rather than technical in nature; that is, if it clearly highlights factors that residents want and need. This allows for a common language to be developed and for the principles of ‘good’ design to be widely understood. The core principles that have been identified, to date, provide a framework for assessing attributes and desired outcomes across the three audience groups and these provide the basis of the next steps for this project.

Prior to this, the Beacon team needs to review and resolve some of the higher level questions that have arisen out of the literature review and the TARGET Group discussion. These remain the current key issues and include:

- Ensuring that any tool strikes a balance between users, including building professionals and potential resident and community users, while not trying to accomplish too many outcomes to render it useless to all groups.
- Recognising that a tool cannot always value what counts, or count what is valued. This suggests that, in some cases, the assessment approach will have to transmit the spirit of a principle (e.g. community interaction) while understanding that some approaches to scoring or ranking are likely to be more subjective than others.
- Accommodating new or emerging typologies and considering flexible means to assess them (e.g. pocket neighbourhoods)
- Determining an appropriate scale and capability for any assessment approach (e.g. 2-unit development vs master planned community)
- Determining the extent to which any tool measures best practice or encourages better practice for smaller or less capable developers
- Being realistic about developers and investors that ‘care’ and those that don’t, and being realistic about potential uptake
- Not replicating existing tools and considering the extent to which the tool links with existing tools and guidance, as well as with BRANZ and MBIE programmes and teams
- Considering how a new tool can enter the market, be promoted and accepted by the targeted users and, particularly, the development industry
- Remaining aware of the limitations of any new tool and managing expectations amongst stakeholders and the final target audiences
- Ensuring that the review of existing tools considers how they work for both ‘good’ and ‘bad’ developments and the lessons learned from these

- Ensuring that any future tool is trialled in a range of cities in order that it demonstrates national appeal.

## 7.2 Aligning with the Building Code

One aim for the developing assessment tool is that it will enable the evaluation of developments *once they are completed* and the units occupied. This would provide a capability for MBIE (and local authorities) to determine if changes to regulatory settings and district plans are achieving the desired outcomes.

In addition, MBIE's Building System Performance Branch is specifically interested in finding out if the Beacon team can identify issues relating to MDH that are not covered by the Building Code but should be included. MBIE is also interested in a tool that can determine if poor performance of a development (or of a specific attribute) is attributable to key aspects of the building regulatory system such as insufficient Code clauses or supporting documents.

With this in mind, a range of pertinent Building Code-related issues (or those that could be pertinent to developing Code changes) are being identified as part of this project. These currently include:

- Lighting, daylight and solar access issues
- Noise and noise abatement issues - both internally between dwellings and externally from the urban environment
- Public / private interfaces and the provision of communal and private outdoor space
- Urban design considerations, including bulk, location, scale, character, legibility
- Relevance of dwelling assessment schemes such as Lifemark and Homestar™ in a medium density setting.

This list will be further developed and explored as a key output for this project.

## 7.3 Key tool attributes

Identification and awareness of the 'gap' has enabled some early thinking on the type of tool that might be required, or, at least, would best fit the market in the current settings. This will evolve as the work progresses to the next phases but, at the current time, the project team envisages that it will have the following key attributes:

- Be simple and easy to implement
- Measurable and objective
- Outcomes focussed
- Straightforward (and inexpensive) to use
- Robust and reliable
- Simple and accessible language
- Not overly prescriptive
- Marketable with simple accreditation
- Involve a feedback loop and a mechanism for continual evolution (and improvement).

## 7.4 Next steps

Findings presented in this first phase of the research provide the foundation for ongoing work as scoped in the original proposal.

During the next phase, the project team will be examining and identifying relevant tools as a means of developing a more detailed medium density quality assessment framework. This work will continue to be informed with ongoing input from the TARGET Group. At this stage, the project team have determined the following existing tools for further analysis:

- **MfE’s Medium-density Housing Case Study Assessment Methodology (2012):** Provides a very useful assessment methodology with a strong urban design focus. The categorisation on a scale of 1 to 5 and the ability of users to score a development and deliver a tabulated set of results is a useful model.
- **The UK’s Building for Life Programme and Built for Life tool (2012):** Developed in the UK this tool presents a very simplified (and therefore practical and useable) set of questions that developers work through to score their developments and attain the ‘built for life’ badge which is useful in marketing their scheme to residents.
- **The MfE’s Urban Design Protocols ‘7 C’s’:** A useful reference from an urban design perspective in relation to the developing core principles.
- **Beacon Pathway Neighbourhood Sustainability Framework (2008 – 2016):** A useful reference for the developing framework including key attributes and core principles but also in the development of a tool that delivers a ‘resident’ voice to test the range of outcomes being developed.
- **Local and central government advice and design guidance:** e.g. Auckland Council’s web based *Auckland Design Manual* and Housing New Zealand Corporation’s *Simple guide to urban design & development*. The developing framework should be designed to enhance and tie into existing guidance aimed at improving outcomes for the built environment. The project team believe that any developed framework could usefully signpost and link to guidance that will allow a developer to enhance and improve the design and community approach with proposed developments.

This next stage will, therefore, build on the work to date and provide a solid next step for the project, leading to a prototype medium density community assessment tool that assists practitioners, residents and communities to assess and measure the functionality, sustainability, liveability and community aspects of medium density developments in New Zealand.

Beacon sees the outcomes benefiting developers as they will be able to better tailor their designs to attract future residents, and wider New Zealand society through the delivery of better quality and more acceptable medium density developments.



*RESIDENTS AND COMMUNITIES NEED TO UNDERSTAND WHAT DEVELOPERS ARE AIMING FOR AND DEVELOPERS NEED TO UNDERSTAND WHAT RESIDENTS AND COMMUNITIES NEED AND WANT*



***Figure 5: Pictures highlighting a range of desirable medium density outcomes***



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