MDH/4.1

The MDH Assessment Framework: Regulatory Overview

FINAL

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HĪKINA WHAKATUTUKI

About This Report

Title

The MDH Assessment Framework: Regulatory Overview

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Reviewer

Abstract

This document is an annex to the main final report prepared at the conclusion of Beacon Pathway's Medium Density Housing Assessment Tool project. It provides the findings from an independent review (undertaken by The Urban Advisory Consultancy) of the main outcome focussed areas identified in Beacon's assessment framework. In order to provide a context for this annex, additional information relating to the assessment framework and the regulatory environment is provided from the main report "Ryan, V. and Smith, B. (2018) Final Report: Medium Density Housing Assessment. Report MDH/4 by Beacon Pathway".

Reference

Ryan, V. and Smith, B. (2018) The MDH Assessment Framework: Regulatory Overview. Report MDH/4.1 by Beacon Pathway.

Contents

1 Introduction

The project addresses the question highlighted under the Building Research 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.

This research examines existing 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. It is focused on identifying the right measures for the New Zealand context and developing a tool or tools to assess New Zealand medium density housing developments.

2 The core outcome 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
- Surrounding community – neighbours and organisations
- Individuals and residents

The core outcome principles, on which the assessment framework for the tools rests, was 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. The aim was to develop a set of outcome-focussed principles which will provide a framework for our target audiences to understand what makes medium density successful.

In turn, these principles helped to determine specific elements for assessment and allowed for the further development of appropriate assessment tools. Each principle has an associated set of assessment questions.

The framework is based on five core principles and associated outcomes:

Character, context and identity	To develop a site and buildings that integrate with or relate to existing building form and style in the surrounding neighbourhood
Choice	The development provides for and enables occupancy by a diverse range of residents that can benefit from and support a thriving local economy with the understanding that high levels of diversity and optimum residential density make the development viable in terms of marketability and cost per unit
Connectivity	Connecting infrastructure enables safe, universal access using active, mobility, shared and private modes of transport within and through the site to identified key destinations
Liveability	Providing quality facilities and facilitating positive interactions between residents and the wider community
Sustainability	Efficient and cost-effective resource use through design, behaviour and technological advancement

These are presented against a checklist relating each outcome to an area and scale of influence from the site and buildings, to the people who live there and the wider neighbourhood. In this way, the framework ensures that its original aims – to determine … '*…how success of MDH is measured at the individual development and neighbourhood level'* – is fulfilled as we develop a tool that ensures quality outcomes for residents. The scale of influence affected by these outcomes are summarised below:

Site	The layout, orientation and wider geological and environmental setting of the development
Building	The design, placement, orientation, and structure of buildings
People	The residents that choose to live there
Neighbourhood	The surrounding neighbourhood, community, and environment directly affected by the development of the site, building construction and new residents

2.1 Who would benefit and use the tools?

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

1) **Developers and designers**. These include developers who are aiming to continually improve their practices, and less experienced developers who are perhaps less knowledgeable of wider urban design and placemaking concepts and practices
2) **Residents (homeowners and tenants)** who want to understand the principles that underpin their developments before making choices about whether a particular building or neighbourhood might be right for them
3) **Communities** that want to understand how a new development complements and enhances their neighbourhood

One potential additional audience is local council representatives aiming to consistently improve housing quality while offering a diverse mix of affordable medium density dwellings.

2.2 The final assessment framework

The assessment framework, and its evolution, is fully presented and discussed in the report *'Ryan, V. and Smith, B. (2017). Medium Density Housing Assessment Tools: Framework Development Working Paper. Report MDH/2 by Beacon Pathway'*. It is important to note that the '*final'* framework presented here represents the framework as it stands at the conclusion of this research project. In practice the developed framework is flexible in its application and designed to be evolved overtime. It forms the basis of the tools that were used in the case study application and was also used as a reporting framework for the case study results presented in the appendices.

The assessment framework, and the corresponding survey tools, have been designed to be flexible and adaptable and can be used to assess medium density housing developments as well as their surrounding communities and neighbourhoods. The approach can be used to guide designs, assess both proposed and built developments, support consultation and community participation as well as inform design reviews. One of the main aims of the work has been to create a tool that is accessible and easily applied by developers seeking to better understand the context of the neighbourhood development area and to apply principles of best practice in both design and community building. The addition of a post-construction residents' survey enables developers to further appreciate the needs of their occupants and to continually improve approaches to the provision of more liveable and sustainable medium density housing.

The assessment framework showing the interaction of outcomes and related areas is shown in the tables below.

2.2.1 Character, context and identity

Scale of Influence				*Outcome Focussed Principles*	
Site	**Building**	**People**	**N'hood**	*Aims: To develop a site and buildings that integrate with or relate to existing building form and style in the surrounding neighbourhood with relation to:*	
✔	✔		✔	Physical landscape	The building design integrates with and enhances local geographic features
✔		✔	✔	Environmental landscape	Natural environmental elements are incorporated into the site which takes its cue from the local surroundings (e.g. waterways, bush etc.).
✔	✔	✔	✔	Heritage and culture	The site takes account of local history, honours heritage and culture, and seeks community direction to identify opportunities to create, exhibit or promote features that add to the neighbourhoods wider sense of place
✔	✔	✔	✔	Sense of place	Site design and layout, key features and artistic works have been developed to create a 'sense of place' recognising and aligning with the existing cultural and community context
	✔		✔	Building character	The building design and materials have been chosen to integrate with and enhance the surrounding neighbourhood character using locally sourced and culturally appropriate materials where possible
✔	✔	✔	✔	Street scape	Entranceways and frontages are welcoming and are in context with and enhance the overall character
✔	✔	✔	✔	Identity	The overall design instils a sense of pride amongst residents

2.2.2 Choice

Site	Building	People	N'hood	*Aims: The development provides for and enables occupancy by a diverse range of residents who can benefit from and support a thriving local economy; with the understanding that high levels of diversity and optimum residential density make the development viable in terms of marketability and cost per unit. These aims relate to:*	
	✔	✔	✔	Residential dwelling typology	The provision of dwelling typologies offers an appropriate choice with regards to existing neighbourhood demographics as well as the demographics of targeted residents (including expected age range, work status, household sizes)
	✔	✔	✔	Building adaptability	Building designs exhibit a range of adaptability and floor plan flexibility responding to changing requirements and the potential for mixing use over time
		✔	✔	Tenure	Diverse tenure arrangements provide opportunities for residents to either own or rent in quality accommodation
	✔	✔	✔	Affordability	A range of dwelling options and supporting financial instruments provide residents of varying means with the ability to live in quality accommodation (e.g. starter home / buy to let / financial assistance)
✔		✔	✔	Opportunity	Proximity to local centres provides employment opportunities and other key destinations enable the target residents to work, live and play in their surrounding neighbourhood. In addition, developments with a mix of commercial / residential premises encourage/enable employment opportunities within the site
✔	✔	✔	✔	Population density	The number of dwellings per hectare and the range of sizes on offer to residents are in line with existing and future supporting infrastructure and services.

2.2.3 Connectivity

Site	Building	People	N'hood	*Aims: Connecting infrastructure enables safe, universal access using active, mobility, shared and private modes of transport within and through the site to identified key destinations*	
✔		✔	✔	Key destinations	The identification of likely key destinations appropriate to the target residents determines the feasibility and potential use of various travel options
✔		✔	✔	Accessibility	Determining the extent of current and future accessibility to key destinations based on distance, infrastructure and services that enable safe travel on foot, by cycle, on public transport, by car, or with mobility aids
✔	✔	✔	✔	Transport choice	Proactive measures to encourage active and shared transport including pool vehicles, charging points for electric vehicles and options for telecommuting
✔		✔	✔	Permeability	Permeability within and through the site supports wider neighbourhood connectivity and facilitates access to surrounding destinations
✔		✔	✔	Safety from vehicles	Design considerations reduce physical conflict between cars and other users within the site and at access points
✔	✔	✔	✔	Parking provision and management	Supply of parking for cars and facilities for cycles are appropriate for residents and visitors and are managed and adapted to encourage active and shared modes over time
✔	✔	✔		Access for services	Design enables ease of access and egress for emergency, delivery and service vehicles
✔	✔	✔	✔	Wayfinding	Wayfinding and signage to and around the site facilitates visitor movement, the identification of resident dwellings while ensuring that designs and naming is appropriate to the site's overall identity

2.2.4 *Liveability*

Site	Building	People	N'hood	*Aims: Providing quality facilities and facilitating positive interactions between residents and the wider community*	
	✔	✔		Building quality	The building design and use of materials provide quality homes that are efficient to run and easy to maintain
✔	✔	✔		Technological integration	Utilities are easily accessible enabling the integration of future technologies into buildings
	✔	✔		Personalised dwellings	Dwellings/private spaces can be personalised or modified to account for changing needs over time including appropriate provision of universal designed dwellings
	✔	✔		Storage	Residents are provided with appropriate personal or shared storage space to accommodate their lifestyle requirements
	✔	✔	✔	Noise control	Design and ongoing management reduces noise to acceptable levels between dwellings as well as between dwellings and public spaces
	✔	✔		Privacy	Building design provides adequate, quiet, private space allowing residents a sense of retreat
	✔	✔		Interactive space	Provision and maintenance of high quality internal spaces where people are likely to interact (e.g. laundry, shared rooms or other communal spaces)
✔		✔	✔	Outdoor space	Residents have direct access to well-maintained public outdoor space with facilities that are appropriate to the resident demographic
✔	✔	✔		Security	Provision of security features, lighting, active and passive surveillance provides a safe environment for all residents within their homes and throughout the site at all times
✔	✔	✔		Emergency preparedness	Design considerations and a site-based emergency preparedness plan take account of residents' immediate needs while supporting wider neighbourhood resilience
✔	✔	✔	✔	Engagement	Residents are encouraged to engage with issues affecting site operation and management and interact actively with each other and the surrounding community
✔	✔	✔	✔	Satisfaction	Resident satisfaction with the site, building and wider neighbourhood is regularly monitored to continually improve site management and inform future development

2.2.5 *Sustainability*

Site	Building	People	N'hood	*Aims: efficient and cost-effective resource use through design, behaviour and technological advancement*	
✔	✔			Climate adaptability	Design considerations account for extreme weather variations (e.g. temperature, rainfall, wind), changing sea levels / flooding and wild fire where appropriate
	✔			Building materials	Building materials can demonstrate durability and third party eco-labelling or responsible sourcing (e.g. FSC / NZ Environmental choice) while ensuring that any waste is recycled and any contamination is remediated
✔	✔	✔		Solar gain	Building orientation takes account of seasonal variations to minimise heating, cooling and lighting requirements
	✔	✔		Warmth and dryness	Building design maximises thermal efficiency and comfort and effectively controls moisture through insulation, glazing and ventilation
✔	✔	✔		Energy efficiency	Energy management maximises the use of renewable supply, the use of efficient appliances, and reduces the need for energy use where appropriate (e.g. through the provision of outside areas for clothes drying)
✔	✔	✔		Water supply and heating	Water management reduces demand through low flow devices and efficient water heating technologies and optimises supply though rain water harvesting and grey water recycling
✔	✔		✔	Storm water management	Storm water management minimises flooding, run-off and associated pollution
✔	✔	✔		Recycling	Provision and active management of waste, recycling and composting facilities
✔		✔	✔	Native ecology	Proactive approaches monitor air and water quality and encourage residents to enhance biodiversity through the protection of local habitats and waterways
✔		✔		Gardening and food production	Space is provided for outdoor activities (e.g. gardening or growing food) where possible or appropriate
✔	✔	✔	✔	Home user guide	Information is provided to residents on the efficient use of building features, appliances and neighbourhood facilities

2.3 Implications for the regulatory environment

The following section of the report presents summary findings from the research as presented in the final report "Ryan, V. and Smith, B. (2018) Medium Density Housing Assessment: Final Report. Report MDH/4 by Beacon Pathway". This information is presented here again to retain this Annex's context should it be read separately to the final report.

The core outcome principles, on which the framework for the tool rests, have been collated from a 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. The aim was to develop a set of outcome-focussed principles providing a framework for stakeholders in medium density housing to understand what makes it successful.

The research has assisted in confirming a gap in existing assessment tools, and the resulting approach provides a mechanism 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 to 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 and communities 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. By their nature, they are not overly technical or prescriptive, allowing a developer and the design community to achieve the outcome required through innovative approaches to the way they provide housing in a medium density setting. Advice from the main Technical Advisory (TARGET) Group was in line with a view prevalent in the literature – that prescriptive design advice can be problematic and can, at times, lead to sub-optimal outcomes.

The current application of the assessment tool enables the evaluation of developments *once they are completed* and the units occupied. The results provide some capability for relevant government agencies such as MBIE as well as local authorities to determine if changes to regulatory settings and district plans might be required in order to achieve the desired outcomes. Obviously, the data set from two case studies is a limiting factor – and therefore the project team recommend further case studies to generate a more representative data set.

However, during the development of the framework and tools and via the case study analysis, a range of pertinent regulatory and Building Code-related issues have been identified as follows:

- **Lighting, daylight and solar access issues:** These can be key to the liveability and sustainability of medium density housing, and significant guidance already exists to promote best practice (e.g. through the Auckland Design Manual). This is an identified area where prescriptive advice can lead to sub-optimal outcomes and the potential to restrict development in denser urban areas in which building occupants may be happy to trade off some level of internal amenity with the additional benefits of inner city living. In

other words, the context of the development needs to be taken into account in assessing these provisions – including the ability of the home occupier to heat, cool and light their home.[1]

- **Overheating and maintaining comfortable indoor temperatures:** Both the results of the case studies and advice from the TARGET Group (as well as consultation with wider medium density stakeholders) indicate that maintaining comfortable indoor temperatures in medium density developments can be challenging. This can be especially the case if designs allow for large areas of north and western facing glazing but fail to address appropriate shading. The assessment framework refers to this issue within the sustainability section dealing with solar gain and energy efficiency. Additionally, tools such as Homestar™ are beginning to incorporate aspects to address overheating. However, aside from some minimum standards of ventilation and insulation requirements covered by building regulations, the issue of overheating is not specifically addressed. It is recommended that further investigation is undertaken in respect to overheating in medium density settings and that consideration is given to the interaction of Building Code standards as well as design standards required as part of local authority planning frameworks (for instance the potential to allow shading and/or eaves to extend outside of the permitted building envelope).
- **Noise and noise abatement issues:** The assessment framework specifically addresses noise control from the point of view of design and ongoing management that reduces noise to acceptable levels, both between dwellings as well as between dwellings and public spaces. Noise is an issue that directly affects the liveability of developments and is a common cause of issues/complaints between occupants. Building regulations in New Zealand provide a set of minimum standards (including set STC ratings) that address airborne and impact sound (under clause G6). Discussions with the developers involved in the case studies and the wider TARGET Group indicated that often developers wishing to deliver a better quality living environments will try to exceed code minimums. Feedback from the TARGET Group suggested that in higher density living environments, the impact of noise is a critical issue and that this would be an important area to examine in more detail from a regulatory perspective.
- **Public / private interfaces and the provision of communal and private outdoor space:** These aspects are another critical element of successful medium density housing and are especially important to fostering a liveable community setting for residents where they can seek social interaction in settings and at times that suit them. Members of the TARGET Group remarked that public / private interfaces and delivering a sense of privacy for residents is something best achieved through design (as opposed to prescriptive rules), but also remarked that it was notable that there were few good exemplars to draw from in New Zealand (in other words, it was not being well delivered). This highlights an area for potential regulatory review with potential for inclusion in design review processes as part of consenting.
- **Urban design considerations, including bulk, location, scale, character, legibility:** To a large extent, these considerations are currently being dealt with at the level of the relevant local authority, using a variety of planning mechanisms such as design review panels, height in relation to boundary controls, minimum setbacks etc. There is an argument for including some of the finer grain design considerations that are highlighted in the framework into the regulatory environment including privacy, a sense of retreat, outdoor space, streetscape and identity. However, in the main, these are thought to be more

[1] *An interesting discussion is set out in a recent report 'Guiding light: unlocking residential density', written for lobby group London First, which critiques the mechanistic way that sunlighting and daylighting rules are applied in London. (http://londonfirst.co.uk/wp-content/uploads/2017/05/Unlocking-Londons-Residential-Density-GIA-London-First.pdf)*

workable as non-prescriptive best practice signallers that could work as part of a design review panel process, or through promotion of workable solutions and case studies (e.g. the Auckland Design Manual).

- **Building Code – detached dwellings vs medium density settings:** Some on the TARGET Group expressed concerns that the current Building Code (and its application) was more concerned with detached dwellings than being responsive to the medium density typologies required of increasing densification in New Zealand cities[2]. A wide variety of important outcomes are highlighted in the assessment framework outlined in this report. Whilst not all of these are appropriate for consideration in the regulatory context, many are important aspects that are currently out of scope with the current NZ Building Code. As part of the ongoing evolution of the medium density assessment framework, a more detailed analysis of the regulatory environment in respect to the outcomes is presented in the following section.

[2] ***This is in line with findings in, as yet, unpublished BRANZ work "Duncan, A., Minnaar, C. & Brunsdon, N. (2017). Getting medium-density housing through the hoops: Resource and building consent. BRANZ Study Report SR381. Judgeford, New Zealand: BRANZ Ltd. "***

3 Independent Regulatory Overview

The following section presents insights from an independent review of Beacon's Assessment Framework in the context of New Zealand's regulatory framework. It is presented here as received by The Urban Advisory consultancy with editing to resolve minor formatting issues but without changing content.

THE URBAN ADVISORY
RETHINKING OUR CITIES

Insights Report: Considering the relationships between Beacon's Medium Density Housing Assessment Outcomes Framework and NZ Building Code/regulation

This Insights Report provides a list of issues / discussion points in response to the following two questions:

1. Does the Medium Density Housing Assessment Outcomes Framework highlight issues relating to medium density housing that are not covered by Building Code/regulation but potentially could (or should) be included? (i.e. could the 'outcome focussed principles' identified in the Framework fit within the Building Code or other planning/council regulations).
2. Where might code/regulation hinder or provide barriers to the successful medium density housing outcomes identified in the Framework? – and, as a supplementary question, what are the broader set of 'barriers to successful medium density housing'?

3.1 Overview

In summary, the MDH Assessment Framework covers off a comprehensive consideration of the issues relating to medium density housing, some of which are covered in existing policy and code, and some of which are not. The extent to which they are addressed varies throughout New Zealand; there are certainly areas where improvements can be made to better provide for medium and high-density housing typologies, and there are opportunities for promoting MDH outcomes by standardisation through regulation nationally.

However, the extent to which the outcomes Beacon have identified are regulated, and how, requires deep consideration. The outcomes referenced in Beacon's Framework cover a broad range of social, economic and environmental issues. As such, the Building Code is just one tool that can be used to address the outcomes identified; investigation into how well policy and code addresses the areas of focus identified will be useful in informing what other mechanisms may achieve the desired outcomes.

3.2 Background and context (TUA research)

The research TUA is undertaking focuses on how 'liveability' outcomes (as they related to medium density housing) are impacted by the legislative and regulatory environment, nationally, and in different cities across New Zealand. During the first phase of this research, relevant policy and code was reviewed to understand where the various aspects of liveability were dealt with in the current legislative and regulatory framework. Subsequent phases of the research will enable a more fulsome analysis of how the technical issues associated with delivering liveability outcomes in medium density housing (MDH) are a result of the legislative and regulatory framework in New Zealand.

The below list was the list of potentially relevant policy created when searching for the various criteria that were identified as being relevant to liveability of MDH at a dwelling level:

Building Act 2004 Building Amendments Act 2009 Building Amendment Act 2013
Housing Improvements Regulations 1947
The Housing Act 1955
Health Act 1956
Housing Restructuring and Tenancy Matters Act 1992
Residential Tenancies act 1986
Local Government Act 1947 Local Government Act 2002
Resource Management Act 1991 Resource Management (Simplification and Streamlining Amendment) Act 2009
Fire and Emergency New Zealand Act 2017
Watertight Homes Resolution Services Act 2006
Housing Accords and Special Housing Act 2013
Property Maintenance and Nuisance Bylaw 2015
Fencing Act 1978
Unit Titles Act 2010
Building (Forms) Regulations 2004 (provides guidelines on applying for an annual WOF under s108 of the Building Act 2004)
The Healthy Homes Bill is currently before Parliament and is also relevant

In determining how liveability would be defined for the purposes of undertaking the review, TUA cross referenced criteria from relevant previous research, as is demonstrated by the table below

Bennet (2016) Apartment Liveability Index Criteria		**General Comment on Right to Housing considerations**	
		Security of Tenure	
		Affordability	
		Accessibility	
		Location	
Community	Environment		
	Neighborhood		
Configuration	Connections		
	Spatiality		
Governance	Maintenance		
	Management		
Indoor Environmental Quality	Acoustics		
	Indoor Air Quality	Habitability	(absence of dampness)
	Thermal Comfort	Habitability	(absence of dampness)
	Visual Aspects		
Quality	Building Quality	Habitability	(soundness of physical structure)
	Building Services and Amenities	Availability of services	
	Materials quality	Habitability	(soundness of structure)
		Habitability	(absence of crowding)
		Cultural Adequacy	

TUA research focused on the blue criteria in the previous table as these were the criteria that were determined as having the most impact at the **dwelling scale** (defined as **the home and immediate surrounds).** However, the research also acknowledged the findings from the literature review previously undertaken, that dwelling liveability is best researched alongside **neighbourhood liveability** – and that the consideration of a neighbourhood scale is critical when thinking about how to determine a set of criteria that reflect the concept of liveability.

The key findings of this research were that:

1. The concept of liveability is not easily translated within the law
2. There is a broad range of policy and code that can impact the delivery of liveability outcomes in MDH projects throughout New Zealand
3. There are both national and regionally relevant legislation and regulation that can impact liveability outcomes in MDH projects throughout New Zealand, and
4. There is little consistency between each regions treatment of these.

Following this research, The Urban Advisory was asked to provide insights to Beacon Pathway on the relationships between Beacon's Medium Density Housing Assessment Outcomes Framework and NZ Building Code/regulation

3.3 Key Insights

The MDH Assessment Framework is successful in highlighting several issues regarding MDH that are not addressed in the Building Code. More importantly, it highlights the fact that there are multiple other relevant pieces of legislation and regulation that are impacting the ability for the desired MDH outcomes to be achieved. Therefore, the key benefit of the Assessment Framework, and the research outputs that will result from the review, will be that the information gathered will enable careful consideration of which identified outcomes could in fact be addressed in the Building Code and which are best addressed in alternative legislation or regulation, or via an alternative standardisation mechanism.

Because the two questions asked by Beacon are intrinsically connected, the following insights aim to answer both simultaneously.

Insight 1 - Beacon's categories touch on a wider set of outcomes than the criteria that were the subject of TUA research, and therefore there will be a much larger range of policy and regulation that needs to be reviewed to get a comprehensive understanding of the current policy and code that impacts each of Beacon's outcomes. Given the breadth of subject matters the five categories touch on, it will be challenging to determine where else in the plethora of relevant legislation and regulation (and Government or Council guidelines and standard or ratings tools etc.) each of the outcomes are referred and or how they are impacted nationally and within each of the regions. Potentially, Beacon will need to further define each identified outcome more narrowly, or adopt criteria for each, so that a comprehensive and consistent search can be undertaken.

Insight 2 - Beacon's five categories reference variables that impact the delivery of MDH at each of the city, neighbourhood and dwelling scales. Many of the outcomes identified, therefore, intersect with other social and environmental issues that are considered by government and regional authorities in various pieces of legislation and regulation outside of the Building Code. To provide a fully informed view about what legislation and regulation are impacting the achievement of MDH outcomes, and which outcomes should be better provided for within the various relevant legislation and regulation, a larger pool of relevant policy and code will need to be reviewed[3].

Insight 3 - See below table for a summary of which criteria was identified within each of piece of legislation.

[3] Note, because the language used in the law does not correlate directly to the language of liveability, our review combined a search of key words but also page turning – a rather time-consuming process –

Liveability Criteria from Bennett 2010			Building Act 2004 Building Regulations 1992 (Building Code)	Housing Improvement Act 1945 Housing Improvement Regulations 1947	Housing Act 1955	Residential Tenancies Act 1986	Auckland Unitary Plan	Christchurch District Plan	Wellington District Plan	Tauranga City Plan	Hamilton District Plan	Queenstown District Plan
1.0 Configuration	1.1 Connections	1.1.1 High Rise Living	■				■	■	■			
		1.1.2 Personal & Private Space				■	■	■	■	■	■	■
		1.1.3 Private Outdoor Access					■	■	■	■	■	■
	1.2 Spatiality	1.2.1 Occupancy		■			■	■	■	■	■	■
		1.2.2 Shape & Configuration	■	■				■	■		■	■
		1.2.3 Size	■	■			■	■	■	■	■	■
		1.2.4 Spatial Organisation	■	■				■	■		■	■
		1.2.5 Storage	■	■				■	■			
2.0 Indoor Env. Quality	2.1 Acoustics	2.1.1 Internal Control of Sound	■								■	
		2.1.2 External Control of Sound	■			■	■	■	■	■	■	■
	2.2 Indoor Air Quality	2.2.1 Air Quality	■				■				■	
		2.2.2 Ventilation	■	■							■	
		2.2.3 Insulation	■	■		■						
	2.3 Thermal Comfort	2.3.1 Comfort	■	■								
		2.3.2 Control	■									
		2.3.3 Insulation	■	■		■						
	2.4 Visual Aspects	2.4.1 Adequate Task Lighting	■	■								
		2.4.2 Natural Lighting	■	■			■	■	■	■	■	■
		2.4.3 Views	■				■	■	■	■		■
3.0 Quality	3.1 Building Quality	3.1.1 Airtightness	■									
		3.1.2 Communal Areas						■		■	■	
		3.1.3 Landscaping					■	■		■	■	■
		3.1.4 Safety	■	■	■	■		■		■		
		3.1.5 Security						■	■	■		■
		3.1.6 Weathertightness	■	■								
	3.2 Building Services and Amenities	3.2.1 Drainage	■	■								
		3.2.2 Emergency Escape	■									
		3.2.3 Facilities	■	■			■	■				
		3.2.4 Lifts	■									
		3.2.5 Parking					■	■	■	■	■	■
		3.2.6 Rubbish & Recycling	■					■	■	■	■	■
		3.2.7 Water	■	■		■						
		3.2.8 Utilities	■			■					■	
	3.3 Materials quality	3.3.1 Deterioriation & Durability	■	■		■						
		3.3.2 Emissions (release of toxins)	■									
		3.3.3 Toxic Materials	■									

The above table is perhaps misleading, in that while many of the criteria are covered in the Building Code, how well each criterion is addressed needs to be more thoroughly investigated. A key point to note is that the inclusion of, or reference to, the criteria within the various policy/code does not give a thorough understanding of the impact it is having (positive or negative) on the associated outcome. The research TUA undertook did not have scope for delving deeply into the adequacy or inadequacy of each criteria, and subsequent phases of the research will focus on getting a better understanding of how the interpretation and application of the legislation and regulation is impacting MDH outcomes.

Further analysis will enable a more informed judgement about which aspects are adequately provided for in the Building Code, which are not, and what is the most appropriate way to address the shortcomings. The scope of the review TUA undertook did not enable analysis of the differences between how each region was dealing with the various criteria identified, and the impact that this was having on the achievement of MDH outcomes within each regional context. The indexing tool has all the clauses identified and can be used to delve more deeply into which criteria are provided for adequately and

which are not, and how this differs between regions. This deeper level of analysis is the subject of subsequent steps in our research that have not yet been undertaken.

Insight 4 - Given the findings of the research, as outlined in the table, an easy delineation that can be drawn to determine which of the outcomes are (or should be) addressed in the Building Code, and what should be addressed elsewhere, is to consider which outcomes relate directly to the dwelling level and which relate to the wider neighbourhood and city scales. As the table above demonstrates, most of the dwelling level outcomes Beacon have identified throughout each category are already provided for in the Building Code, as opposed to the outcomes that are oriented at the neighbourhood or city level (i.e. they impact more than just the private dwelling) which are not.

Because of the nature of these broader outcomes - for example, wayfinding, parking and safety, tenure, affordability, opportunity, resident dwelling typology and building adaptability and all the principles covered in the CCI category - they are generally addressed within alternative legislation/regulation that addresses wider social or environmental outcomes. For example, the Resource Management Act (and its associated City/Town Plans), along with the urban design panels, address most outcomes outlined in the CCI category; the outcomes defined in the Choice category are dealt with by various health and social-economic and wellbeing policy; while the outcomes in the Sustainability category are addressed in multiple environmental policy and regulation.

Insight 5 - The separation of ‘private sphere’ and ‘public sphere’ in legislation and regulation is reflective of a culture focused on developing standalone dwellings. What TUA’s review of the legislation and regulation showed is that the current Building Code does not provide well for encouraging the full range of housing typologies that exist. The current legislation has significant shortcomings in promoting the MDH outcomes identified, as there is a much wider set of considerations that need to be thought about when developing MDH as opposed to stand alone housing, for example, all of the outcomes identified in the connectivity, choices and liveability categories.

However, if the Building Code did provide for the outcomes that have impacts which extend beyond one’s personal/private space and into the common or collective sphere, it would require a complete overhaul; which then raises the bigger question of what is the most appropriate way to achieve MDH outcomes Beacon have identified? This is something that needs further thought urgently - at a national level. A key part of this conversation should be about how the current Building Code does not provide well for the wider neighbourhood and city scale outcomes Beacon have identified. Currently, it is oriented towards standalone dwellings and does not give due consideration to the non-structural (explained as spatial and interactive elements) of buildings and how people live in them.

Therefore, a multi-dimensional approach to thinking about how to achieve the MDH outcomes that have been identified is required, as it is unlikely that this is the responsibility of the Building Code alone. It is likely to be more appropriate that the outcomes can be achieved in alternative national or regional legislation or regulation or via another mechanism (i.e. ratings tools).

Insight 6 - The Building Code is a minimum standard – arguably the Building Code should apply a tiered approach to compliance (e.g. Grades 1-3), to incentivise the uplift of quality in building construction. If there were standards, or levels of compliance, we could lift the minimum standard of housing being built but also enable higher quality buildings to be built through standardising more materials and compliance and therefore reducing the cost. What the Beacon work highlights, therefore, is that it is important to think about the purpose of the Building Code. The current purpose might be different to the future purpose due to the changing nature of housing stock and increasingly diverse typology base.

A quick review of each category, and its appropriateness for inclusion in the Building Code is provided.

Character Choice and Identity - Most of the CCI outcomes are covered in, or impacted by, the RMA and its various partner Town Plans, not the Building Code. Therefore, currently Beacon have multiple sets of planning documents, each of which deal with different aspects differently. The Town Plans themselves vary from those that are principles-based (older documents like Wellington that have not been updated) to those that are very prescriptive (Auckland and Christchurch as examples). There is definite opportunity to think about whether any of the CCI outcomes could be standardised nationally, if there was a way to assess or measure them. For instance, sense of place could be included if there was significant data that gave us clear benchmarks to compare the degree to which a sense of place is achieved or not.

Choice - Codifying standards nationally is one way to get consistency or life standards/quality; however, given how many pieces of legislation and regulation currently touch on these various aspects Beacon have identified across the five categories, a review and consolidation of them into the Building Code would be challenging. The choice category is the most unlikely to be addressed through inclusion in the Building Code. These are much more macro issues that are probably better dealt with in a cross-sector strategy, such as a National Housing Strategy and then codified in the various relevant pieces of relevant legislation.

Connectivity - The Building Code's current focus is on construction and materials quality. Vast improvement could be made if it were to improve its regulation as it relates to spatial quality and the other elements that impact how people live in buildings (MDH particularly); for instance, the outcomes in Beacon's Connections category are not well provided for in the existing Building Code, such as differentiation between public and private spaces that connect, communal areas and landscaping. Some cities have started to think about these things in their various planning documentation; however, there is huge differentiation between how each region is addressing the range of outcomes that Beacon have identified as essential elements of MDH living. Understanding which of these should be standardised nationally would require much deeper analysis of the variation between different cities regulations.

Liveability - From a quick assessment, the outcomes determined in Beacon's liveability category are where there is the most potential for inclusion in the Building Code – if it were

determined that the Building Code was the best mechanism for standardising these elements. Arguably, standardisation does not need to be done through the Building Code and is better done using a ratings tool. Alternatively, it could be addressed through changes to other existing legislation/regulation (given the nature of the criteria, and their interrelatedness with health and social-economic considerations) or addressed within purpose-built new legislation.

The existing Building Code was not created with consideration to the breadth of housing typologies that now exist. The outcomes Beacon have identified in each category are specifically relevant to all MDH and apartments, but not all are relevant to stand alone homes. To address this, consideration could be given to the development of a specific section of the Building Code that address the outcomes in the connections and liveability categories.

Sustainability – Given the nature of the outcomes sought in this category it would be advisable that all these elements were incorporated into the Building Code, except the Home User Guide which should be a stand-alone mechanism to change behaviours. Gardening and food production would be a stretch, but again it depends on the housing typology; as it relates to MDH it probably could be provided for in the Building Code (providing the code we are talking about is not the existing one!)

3.4 Conclusion

Yes, the Medium Density Housing Assessment Outcomes Framework highlights issues relating to medium density housing that are not covered by Building Code/regulation. The current form of the Building Code does not lend itself well to incorporation of the broad range of outcomes-based principles identified by Beacon, and many of these are addressed in alternative legislation and regulation. Which outcomes are best addressed in the Building Code is dependent on several considerations about the appropriate scope of the Building Code, and what other legislation, regulation, or alternative mechanism could be used to achieve the MDH outcomes identified.

More detailed research is required to understand how the existing Code/regulation is hindering or providing barriers to the successful medium density housing outcomes identified in the framework. It is likely that there are several other barriers that are not related to the legislation and regulation framework of New Zealand, including development feasibility, perceptions and cultural norms about lifestyle choices and awareness or familiarity with a relatively new building typology. This information is not easily understood through reviewing existing legislation and regulation, and the findings of subsequent research phases or alternative research would enable more informed insights on what the broader set of 'barriers to successful medium density housing' are.