MBIE : Smarter Compliance Pathways

Enhancing clarity, consistency and certainty of the Building Code

Summary of Findings

30.11.2018

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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BUILDING PERFORMANCE

ThinkPlace

SMARTER COMPLIANCE PATHWAYS INTENT

To improve the current Building Code System compliance pathways to make them **future-focused and user-centric, enhancing clarity, consistency and certainty.**

To enable system users to unlock productivity opportunities **(through innovation and/or technology)** while maintaining building quality and performance.

Executive Summary

Background

The objective of this project was to engage with stakeholders in the Building and Construction Industry to surface user-centric and future-focused compliance pathway opportunities.

During the later half of 2018, on behalf of MBIE, ThinkPlace conducted a series of regional workshops and interviews across the New Zealand with this objective in focus.

This collaborative approach placed the user at the centre of the process to both inform possible changes and increases the probability of Industry adoption once system changes are made.

MBIE are also keen to leverage innovation and technology to enable greater productivity and efficiency gains across the Building Code system. This was one opportunity space identified by users.

Findings and outcomes

As a result of the interviews and workshops, the sector participants jointly identified nine opportunities for improvement. We also reflected on how these might influence the existing Building Code System model. In doing so, we conceptualised a possible new model for consideration.

Opportunity areas

1. **Increase the ease of understanding.** Navigation and comprehension of the Building Code is difficult. Reorganising the structure, improving readability and simplifying the language will improve usability.
2. **Raise the Code understanding baseline.** A gap in Code understanding exists for a variety of reasons. Raising the base-level of understanding on the Code and its application. On the job learning is not sufficient on its own, and needs to be complemented by other means.
3. **Reorientate the Code based on users, via user typologies.** The Building and Construction Industry has become highly specialised however the Code is seen as being a "one size fits all " approach. The Code system needs to reflect a user-centric model.
4. **Reorientate the Code based on building types, via building typologies.** The Code needs to reflect emerging building typologies and recognise the need for specific Acceptable Solutions and Verification Methods for Medium-Density Housing and Pre-Fabrication. There is also an emerging shift in mindset from 'building' to 'assembly' that needs to be catered for.
5. **Leverage technology to enable usability.** An intelligent digital Building Code would not only solve current inconsistencies but also support the Code's ability to evolve and keep pace with with Industry changes.
6. **Drive positive system behaviour by taking tangible steps to reduce friction points.** A key friction point is often the relationship between the BCA and the Industry. Alignment with and utilisation of quality assurance plans, streamlining of the Code and refocusing activities on high value work will reduce the friction in this relationship.
7. **Foster a more supportive environment to enable Alternative Solutions.** Acceptable Solutions have created a comfort zone. At every Alternative Solution touchpoint, there needs to be ways in which choices can be presented to Code users to better support their decision-making (a clear choice architecture).
8. **Enable the Industry to innovate.** There is an element of learned helplessness when interacting with the Code. For example, the risk-based consenting approach is allowed for but not acted on at scale. Possible ideas included empowering users through levels of self-certification. This would increase efficiency and confidence to result in cost savings to enable a focus on innovating better solutions.
9. **Leverage global best practice to evolve the Code.** Building practices are evolving at at an accelerated level in New Zealand and around the world. By identifying international best practice combined with digitisation, the integrity and quality of the New Zealand Building Code would be able to keep pace as well as improving efficiencies.

A possible reimagining of the Building Code system model

The key findings in this report point the direction to a possible new Building Code system structure.

The key feature of this possible new model is re-orientating it to user type and building type. This would be a major shift and place the user at the centre. It would also align the structure of the Code with the type of building work and to encourage innovation while maintaining quality.

Further validation would be required to move beyond conceptualisation, but it has the potential radically increase the usability of the Code by the Industry.

System influences

During the project many Industry stakeholders voiced opinions on wider system influences such as mindset and culture, risk and liability and working relationships. While outside the scope of this project, these important points and ideas have been captured in the Appendix so that they can be leveraged by other improvement initiatives currently underway within MBIE.

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Section one

INTRODUCTION

"We need more collaboration and communication between architects, BCAs and builders. We need to work together."

Overview

The following pages provide a summary of the co-design research methods and a summary of what we heard regarding the current Building Code system. This will enable better understanding of the user-generated outcomes.

Content of this section:

1. About this document
2. Project journey
3. Geographic spread and participant types
4. Points of view on the current state of the Building Code system

About this document

Overview

This document has been produced as part of MBIE's Smarter Compliance Pathways project and is a reflection of the voices of key users of the system.

It highlights opportunity areas to improve the current Building Code system Compliance Pathways to make them future-focused and user-centric.

These opportunity areas were generated through a combination of one-on-one interviews and workshops with people from across the building and construction sectors. ThinkPlace has synthesised the outputs and information gathered from participants through these activities.

Purpose

The purpose of the report is to highlight the opportunity areas within the context of broader system influences. While the focus of the project is specific to improving the Compliance Pathways usability, key influences exist outside the scope that arose naturally throughout the process. These additional viewpoints, opportunities and ideas have been included to act as the solid foundation of user research to inform decision making at MBIE.

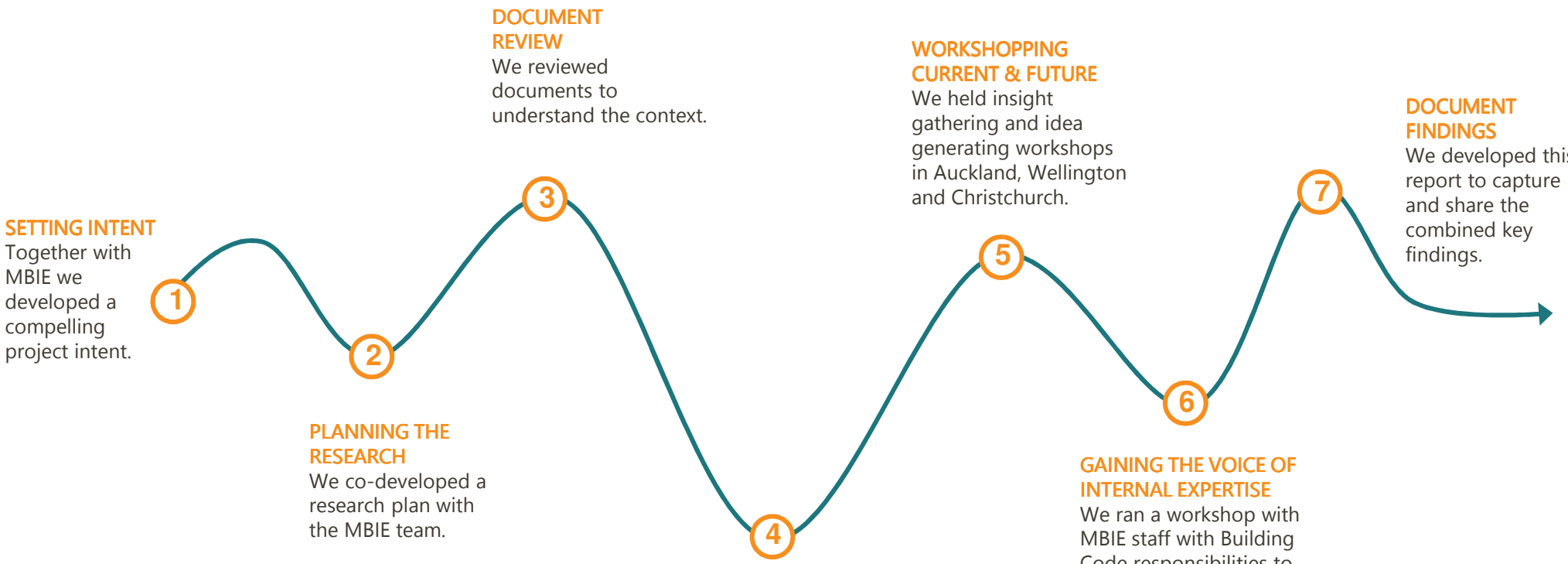
Who should read it

Primary audiences for this document include:

- MBIE decisionmakers with a role in improving the Building Code system
- MBIE staff with a role in administering the current system
- Project staff tasked with making the system more user-centric
- The New Zealand Building and Construction Industry for whom this report was ultimately created

Project journey

A high-level overview of the collaborative research approach with MBIE and the building sector.



Geographic spread & participant types

Interviews

We conducted 18 interviews, one hour duration, with stakeholders across the Building and Construction Industry. Most of these interviews were conducted by phone as this was convenient for the interviewees.

Workshops

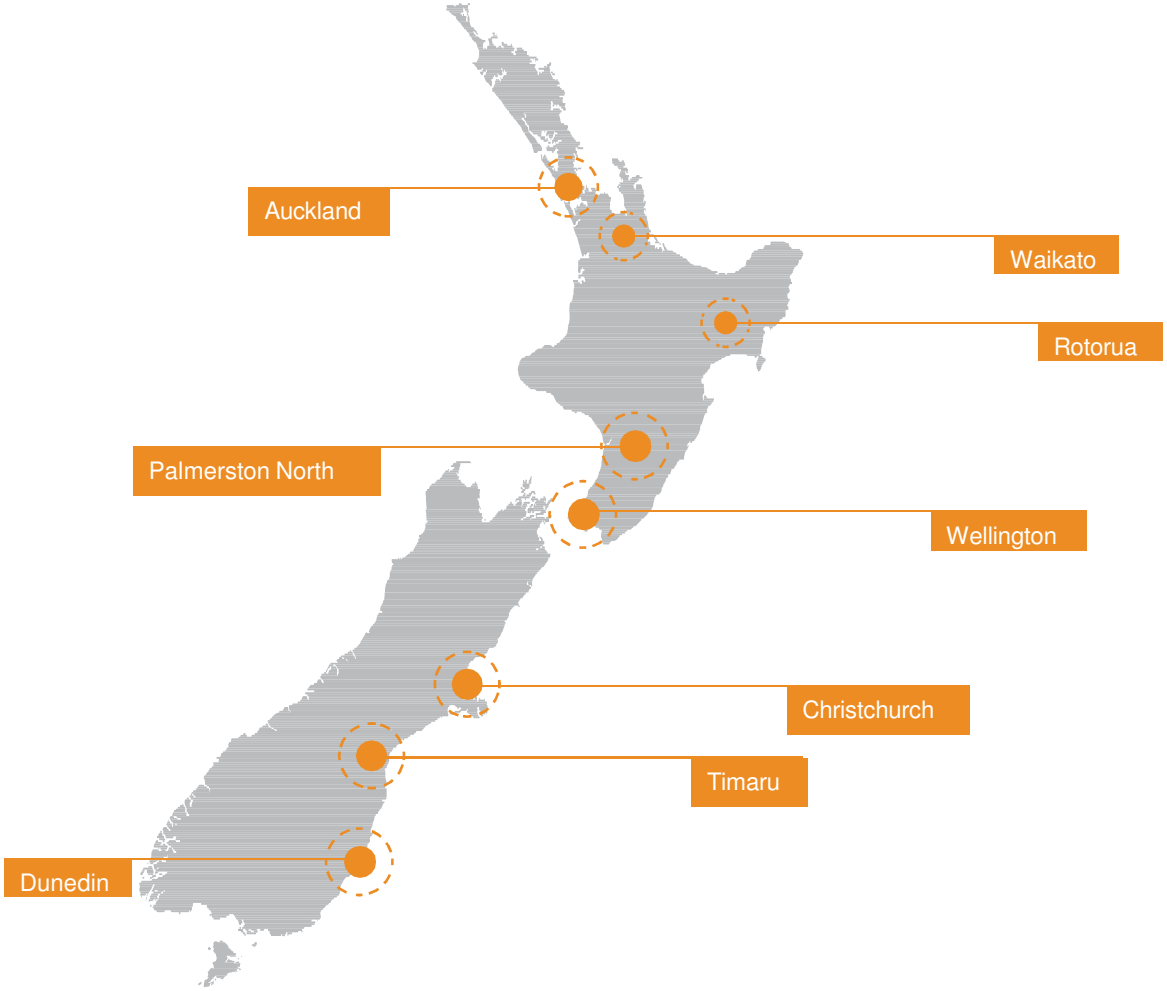
We facilitated three regional workshops with a diverse range of participants in Auckland, Wellington and Christchurch.

We held a fourth workshop with MBIE's System Performance team. Other interested MBIE members attended, including those from Communications and Engineering.

Participants

The people contributing to this initiative included:

- Building consent officers & building consent managers
- Builders, roofers & plumbing representatives
- Suppliers
- University heads of department
- Architects both residential and commercial
- Technical managers and engineers
- Large-scale building service managers
- Property council representatives
- Industry training organisation leaders
- Pre-fabricated building business owners and technical managers



Points of view on the current state of the Building Code system

The views that follow were specific to the Building Code system and compliance pathways.

Other views not specific to the Building Code system are provided in the **Appendix.**

Changing the code

There is a belief that if Standards are updated, this will lead to faster consent/compliance and increased efficiency. There is also a belief that government is half-hearted when it comes to making any changes.

The format and style of Acceptable Solutions and Verification Methods make it difficult to update. The current layout and structure inhibit easy navigation and readability.

Complex buildings are now more "systems" than "elements". The Code does not recognise this.

"We are 25 years behind Europe, particularly in building efficiency."

Mindset shift

The Building Code is seen by most as a target, not the minimum standard. This is hampering innovative building and practices. Some called for the Building Code to be aspirational and not as a minimum target. However, it was also noted that currently it is seen as a very high bar for a lot of people in the Industry.

Leveraging the international building community

Streamlined Alternative Solutions for products and methods were proposed by leveraging international science, research, Standards, innovation and practices.

For example, the UK considering going back to clerk of works.

Keeping up

Changes to the construction industry are happening faster than what the Code can keep up with. People thought there were not enough new, higher quality Acceptable Solutions.

Industry is creating Standards, e.g. WPM code of practice E3/AS3, but these are not being picked up by MBIE.

"Updating the Code would mean BCAs are not using an out-of-date Code to try to assess something that far exceeds it."

Performance versus prescriptive

There are conflicting views on whether the Code should be performance or prescriptive based. Tension exists between simplification and empowerment within the Industry.

Section two

SMARTER PATHWAY OPPORTUNITY AREAS

"Their online BCA portal is okay, if only it was consistent with our local BCA's one."

Building sector generated opportunities

The following pages represent a synthesis of key opportunities specific to the Building Code system and compliance pathways. They are a reflection on the shift in the system to be more user-centric and highlight the preferred future as envisioned by key stakeholders.

The system opportunities are organised based on the level of participant desirability and overall feasibility. They must be viewed holistically for successful implementation, as they relate to each other and also to the broader system influencers.

The opportunity areas were synthesised from the workshop and interview outputs:

- Stakeholder interview data
- The current and future state experience
- Opportunity areas
- Concept creation
- Underlying system principles

The following information is divided into:

- An overview of the key system shifts
- Opportunities to enable user-centred change
- Participant ideas to improve usability
- Key quotes that speak to the need for change

Smarter Pathway Opportunity Areas:

1. Ease of understanding
2. Raising the baseline Code understanding
3. Compliance pathways by **user** typology
4. Compliance pathways by **building** typology
5. Technology enablement
6. Creating positive behaviour changes
7. Enabling Alternative Solutions
8. Industry enabled to innovate
9. Code evolution leveraging global best practice

Smarter Pathway Opportunity Areas

1. Ease of understanding

From

A highly technical, daunting and difficult to navigate Building Code system

To

A simple, usable and well-communicated base of essential Building Code information

2. Raising the baseline Code understanding

From

BCAs as quality controllers and having to go over and above on education of regulatory system

To

A powerful base-level of knowledge across the Industry on compliance information for designing to Code

3. Compliance pathways by user typology

From

A system which often makes users encounter a one-size-fits-all approach

To

Knowledge pathways aimed at system users and enabling them to achieve higher levels of system productivity

4. Compliance pathways by building typology

From

Content heavy building code clause structure requiring deep navigation to find relevant project data

To

A streamlined and focused set of code clauses relevant to the building type

Smarter Pathway Opportunity Areas

5. Technology enablement

From: Large-scale, late adoption of new technology and a multitude of digital platform non-compatibility

To: A digital Code, enabling Industry to access highly usable data when and where needed and on a platform that works for them

6. Creating positive behaviour changes

From: Misalignment of usability, causing friction and causal loops which negatively effect the system

To: Access to knowledge used as leverage to drive positive system behaviour

7. Enabling Alternative Solutions

From: A minimum standard Industry mindset stuck in the comfort of Acceptable Solutions

To: A proactive Industry and regulatory system supportive of and endorsing Alternative Solutions in the Code

8. Industry enabled to innovate

From: A mindset of historically learned helplessness in the Industry dragging down innovation (can do but don't do)

To: A high degree of confidence, expertise and the attitude to innovate

9. Code evolution leveraging global best practice

From: A functional Building Code system, however slow to adapt to change, with variation between review times

To: An evidence-based Building Code system with early adoption of international best practice for faster evolution

1. Ease of understanding

From

A highly technical, daunting and difficult to navigate Building Code system

To

A simple, usable and well-communicated base of essential information

OPPORTUNITIES

How might we...

- Make our regulatory documents easy to navigate and fast to find?
- Increase the transparency of consenting and raise awareness of Alternative Solutions?
- Create Standards and Amendments in collaboration with Industry and written in user-friendly language?
- Rethink standards with the user in mind and ease of integration and communication?

PARTICIPANT QUOTES

> *"The Code of Practice for Internal Wet Areas was necessary because of the basic lack of standards in this area, that is not an uncommon event."*

> *"The Gib Site Guide has everything in it you need. I still have a copy in the van and use it all the time, especially with my apprentice."*

> *"New Zealand Standards have a similar goal here, the ease of understanding standards."*

IDEAS

- Guidance section included in Code to explain Reasonable Grounds, followed by the performance criteria prioritised ahead of objective and functional requirement
- Split out Verification Methods and Acceptable Solutions to create less confusion and pages to navigate
- Change to more distinctive and identifying language to remove confusion with resource consent
- Explore collaboration between Masterspec, GS1, Standards NZ, EBOSS and MBIE to create a national library of approved products
- Drag and drop style for regulatory documents to aid in referencing code within applications
- National funding of Standards for easier access, potentially through a building levy

2. Raising the baseline Code understanding

From

BCAs as quality controllers and having to go over and above on education of regulatory system

To

A powerful base-level of knowledge across the Industry on compliance information for designing to Code

OPPORTUNITIES

How might we...

- Raise the standard of education and commitment to learning across the sector?
- Extend the knowledge of compliance and regulations beyond learning on the job?
- Align knowledge and expectations to strengthen BCA relationships with Industry?
- Enable architects and designers to show proper evidence for Alternative Solutions?

PARTICIPANT QUOTES

> *That is a hole at the moment. We could accept the students but need to spread across all ITOs and it needs a monitoring program as well.*

> *Design skills and experience have been diluted due to volume of people designing and building small house, now moving up to terraces - there are gaps in these jumps.*

IDEAS

- MBIE having an FAQ section again
- Webinars and online learning modules
- A "Building Act Handbook" for owners to understand and manage risk
- Transparent rating system for building practitioners and BCOs to incentivise knowledge upkeep
- Architecture schools & ITOs with BCS built into the curriculum
- Graduate program in the regulatory system and development of career pathway
- Mandating training on and qualifications in the regulatory system
- Define role of continuous education between Industry Organisations, MBIE and Central Government

3. Compliance pathways by user typology

From

A system which often makes users encounter a one size fits all approach

To

Knowledge pathways aimed at system users and enabling them to achieve higher levels of system productivity

OPPORTUNITIES

How might we...

- Streamline the process, scale our productivity and still maintain quality?
- Empower those system users who can build momentum toward innovative change?
- Create a level of self-certification but still maintaining high quality throughout the sector?
- Create a system that enables innovation by encouraging Alternative Solution pathway use?

PARTICIPANT QUOTES

> *"The Acceptable Solutions are known by the trades, we were trained on them... it's like business as usual... I question whether they even need to be on the plan."*

> *"We pay for the inspector to turn up daily, often to inspect the same process inspected on an identical building two weeks ago, a layer of self certification particularly on say, Purlin fixings, seems like a no brainer for me to self- certify."*

> *"With my own indemnity insurance, I am more than happy to sign off my own work."*

IDEAS

- Customised templates for categories, not one-size-fits-all
- Verification Methods targeted towards architects and designers matched with specialist BCOs
- Quality assurance plan related pathway for prefabricated and offsite manufacturing Industry enabling levels of self certification
- Multiple pathways with degrees of self-certification based on ability, licensing and project complexity
- **Three pathways**
  1. **Simple:** Based on Acceptable Solutions, if you hold a license, have the skills and approval just do it
  2. **At scale:** Cookie cutter style builds using only off the shelf approved systems targeting Medium-Density Housing
  3. **Complex:** Risk based which uses a staged consent model and requires a mastery level of skill and competence aligning with self certification

4. Compliance pathways by building typology

From

Content heavy building code clause structure requiring deep navigation to find relevant project data

To

A streamlined and focused set of code clauses relevant to the building type

OPPORTUNITIES

How might we...

- Streamline pathways to align the actual and planned work with the Building Code structure?
- Create a compliance framework based on building classifications (ie. risk and complexity)?
- Simplify the Compliance Pathway specific to Medium-Density Housing?
- Improve the readability of the Building Code to increase efficiency and ease of reference?

PARTICIPANT QUOTES

> *For us in the residential market half the clauses are irrelevant anyway.*

> *I'm really just looking for clear guidelines and consistency, we're always aiming for one building and one consent but across BCAs and people it's hard and I just work within the system.*

> *Multi-Proof has merit, whether it's that or we pick up the Quality Assurance Plan idea as a pathway so long as it has a guaranteed faster turn around for me and across multiple BCAs then that works.*

IDEAS

- More Acceptable Solutions specific to Medium-Density Housing
- Introduce Building Consent by building type. Effecting a risk approach to the process
- Code structure based on building type creating a "fast lane checkout" for simple buildings
- Building Code performance criteria based on housing typology and within Pre-Fab options:
  - Components
  - Pods
  - Walls
  - Modules
- Only show relevant clauses digitally based on building type
- Building Consent only required under certain parameters

5. Technology enablement

From

Large-scale, late adoption of new technology and a multitude of digital platform non-compatibility

To

A digital Code, enabling Industry to access highly usable data when and where needed and on a platform that works for them

OPPORTUNITIES

How might we...

- Encourage adoption of digital practices and infrastructure in multiple languages within the compliance pathways to increase efficiency and reduce inconsistency?
- Move the Industry from building to assembly by way of digitisation, prefabrication and technology enablement?
- Incentivise BIM systems adoption and capabilities to improve pathways to compliance and remove RFIs?
- Use cloud-based applications and multiple methods of communications and training to improve accessibility on any device?
- Build accountability, transparency and traceability into the compliance pathway process?

PARTICIPANT QUOTES

> *"The technology exists elsewhere in other industries, why not ours?"*

> *"Digital is not just a scan to PDF, if it's app-based, then it needs to be user centric for people to pick it up and run with it."*

> *"BIMX out of ArchiCAD is best viewed on a tablet or an iPad. I don't know why the BCA can't use it. Maybe it's just a system compatibility issue?"*

> *"We should have priority 'gold status' or the like for processing time because we make up such a large percentage of the applications through the BCA."*

IDEAS

- Create a building code app that is easily navigable, provides guidance and sends notifications
- Chatbot for FAQs regarding compliance pathways which guides people through the process
- Factor inspections via a combination of Internet of Things sensors learning correct human and machine procedure cycles
- Utilise blockchain for Building Code amendments and providing accountability for the producer statement scheme
- Make BIM open source and free for widespread accessibility and adoption. Building systems auto update to BCA portal
- Self-learning, digitised building code that updates automatically (e.g. assesses 80% of application for determining how an Alternative Solution can become an Acceptable Solution)
- Smart systems learning the patterns of product specifications and building greater system efficiency. e.g., PS1 via photo based AI
- Digital formats for Standards
  - Rethinking Standards as usable content (i.e. visual aids)
  - Ability for Standards content to be integrated into third- party products to aid compliance

6. Creating positive system behaviours

From

Misalignment of usability, causing friction and causal loops which negatively effect the system

To

Access to knowledge used as leverage to drive positive system behaviour

OPPORTUNITIES

How might we...

- Tighten the Building Code to minimise misinterpretation and subjectivity?
- Create an industry-wide culture of continual improvement that learns from mistakes made in the past?
- Effectively share knowledge through relevant information that is accessible by all and cost is not a barrier?

PARTICIPANT QUOTES

> *"Medium-Density Residential is perceived as stacking houses on top of each other. It's much more complicated in fire and acoustics which is not understood by designers and builders."*

> *"Huge delay in what is a minor change to a fire wall... It's peer review after peer review... we could've built a 25 block of units in nine months but it's taken over four months to get consent."*

> *"People lose sight of what material difference in the building it will actually make... there is no lateral thinking whatsoever."*

IDEAS

- Put clear targets on Acceptable Solutions - B2/VM1 to be more prescriptive and raise the level of quality
- Acceptable Solutions for Medium-Density Housing with particular focus on fire and acoustics
- Unified consenting checklist between councils and support regional approach
- Updating, replacing or removing Acceptable Solutions that are outdated
- Tighten up on CodeMark eligibility (e.g. Aluminium composite cladding, CodeMarked but proven to be dangerous
- Ability for engineer to approve minor changes in CodeMark or Multi-Proof certificates

7. Enabling Alternative Solutions

From

A minimum standard Industry mindset stuck in the comfort of Acceptable Solutions

To

A proactive Industry and regulatory system supportive of and endorsing Alternative Solutions

OPPORTUNITIES

How might we...

- Create a proactive Industry and regulatory system supportive of and endorsing Alternative Solutions?
- Share the learning and innovation that is already happening across the sector?
- Align the human need with the appropriate technology or digital platform?
- Create an identification system network for global technologies that are emerging and appropriate for our conditions?
- Encourage Industry and council to collaborate to promote the use of Alternative Solutions?

PARTICIPANT QUOTES

> *Currently you end up doing what is easy and not what's best.*

> *"The process for getting newer products approved is a nightmare. If it's different, then it's difficult."*

> *Code clauses and related Acceptable Solutions are out dated and you can find flaws in the science underpinning them.*

> *We can have the walls up and roof on real quick, weathertight in 3 days.*

IDEAS

- Case study of the benefits when using Alternative Solutions over Acceptable Solutions
- Expanding MBIE solution guidance
- Subsidise the use of Alternative Solutions
- Support for BCAs when processing Alternative Solutions through an online resource or simplified tool
- Extension of Code Clauses on proven science. e.g. H1 accounting for horizontal heat flows in concrete slabs
- Central BCO for processing Alternative Solutions. A team of experts who can draw on the collective wisdom of the group

8. Industry enabled to innovate

From

A mindset of historically learned helplessness in the Industry dragging down innovation (can do but don't do)

To

A high degree of confidence, expertise and the attitude to innovate

OPPORTUNITIES

How might we...

- Implement solutions for an industry that is made up of more specialised skills and sub-systems?
- Enable and scale the ability for levels of Industry self certification?
- Employ a digital platform to be a singular source of information?
- Create transparent systems of digital communication that are smart enough to work across existing platforms?

PARTICIPANT QUOTES

> *"It's luck of the draw as to who you are going to get as a BCO and the outcome."*

> *"Staff are often simply not empowered to make the decision without upper management."*

> *"We can create micro-credentials for a licensing programme. For example we have companies who only install kitchens and it's always a case of supply and install."*

IDEAS

- Structure Code by typology that also consider specialised trades for supply, install and monitoring
- BCA cross collaboration to share best practices For example pre fab level of self certification via a quality assurance program
- A database of successful Acceptable Solutions and Alternative Solutions; a function of a Code Hub-like platform
- Extension of CodeMark to entire buildings combined with awareness creation and the education around applicability
- Digitisation and automation of consents based on precedence
- Identify the key intervention points for both a central regulator and Industry to manage risk and accountability

9. Code evolution leveraging global best practice

From

A functional Building Code system, however slow to adapt to change, with variation between review times

To

An evidence-based Building Code system with early adoption of international best practice for faster evolution

OPPORTUNITIES

How might we...

- Utilise international best practices, smart tools and technology to build our own library of system elements and avoid making the mistakes of others?
- Speed the process from research identification to sector adoption?
- Change the mindset that we need to "go it alone" in terms of the Building Code system without losing our sovereignty?
- Look beyond our own backyard to leverage international networks and attract international talent?

PARTICIPANT QUOTES

> *"There are loads of good examples. We are only a country of 4.5 million people. Why re-invent the wheel?"*

- *Canada's hybrid Building Code system*
- *Germany's self certification scheme*
- *Australian North Territory's minor building work self certification*
- *Sweden's prescriptive based model*
- *France's approach to consent*
- *Queensland's insurance model*

IDEAS

- An evidence based research project into international Building Code systems and the applicability to the NZ context - explore the reasons as to slow adoption for B.C.S change and investigate the resilience of systems to external and natural events
- Standards NZ able to facilitate the adoption of international Standards that are only retested when appropriate
- Research and adapt the Industry structure that sits underneath each compliance pathway
- Using or modifying Acceptable Solutions that have been proven elsewhere, targeting Medium-Density Housing building techniques

Section three

A POSSIBLE NEW SYSTEM MODEL

"It is the usability of the system that is broken."

What is it?

The following possible new system model is conceptual and based on the key findings from engagement with Industry stakeholders including BCA representatives and MBIE team members. The major change to the model is to introduce two new layers; firstly, with the user in mind and secondly, with the type of building work that is being done.

Why it is important?

In complex system design, the most significant leverage point is the behaviour of users. By listening to the different users of the system and considering their respective needs, this can enable desired behaviours and lead to greater system efficiency.

How is it different?

- Recognises the specialised nature of the Industry with users rarely spread across more than one building category
- Amplifies performance and innovation in the layout of the model and regulatory documents
- Lifts the Guidance Documents to the be included in each Code Clause
- Simplifies and clarifies document structure within categories
- Is future-focused, accounting for current and emerging building methods
- The model is underpinned by Alternative Solutions (proposed renaming to 'Innovation Outcomes') to cut across all building types and incentivises design teams and suppliers to innovate.

The result

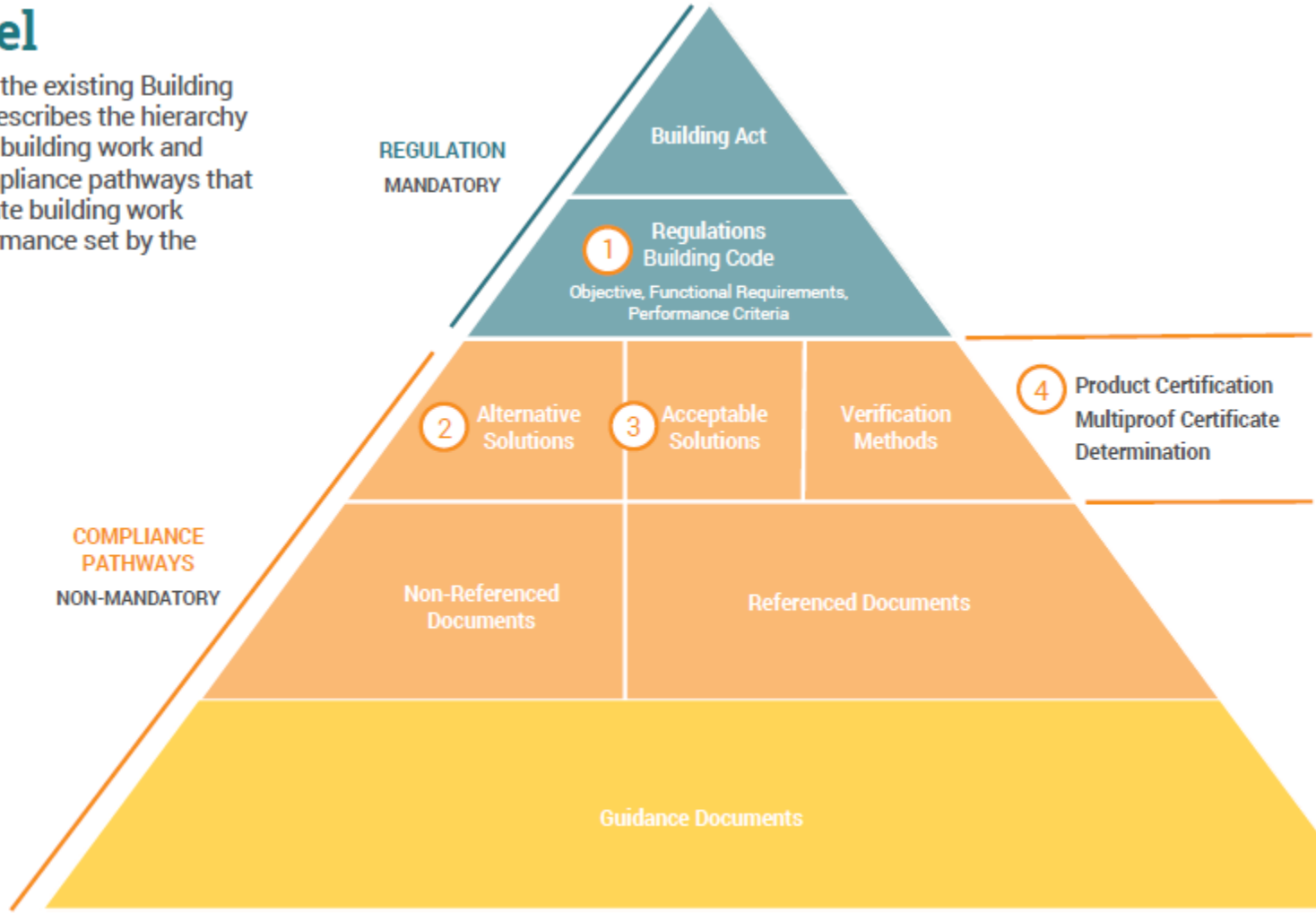
A possibility for a higher performing system model which would theoretically results in the level of MBIE guidance at the base becoming less. To achieve this, significant Industry engagement would be needed to co-create the robust elements within it and to empower the Industry.

Key possibilities:

A. Pathways by user type
B. Pathways by building type
C. Regulations restructure
D. Layers of self-certification

Current model

This is a representation of the existing Building Code system model that describes the hierarchy of legislation that governs building work and illustrates the various compliance pathways that may be used to demonstrate building work meets the minimum performance set by the Building Code.



USABILITY ISSUES

1 **Regulation readability**
The Code is partly out-of-date with long gaps between reviews. Readability is an issue as it is not in a user-friendly format or language. no guidance and the performance criteria toward innovation comes last.

2 **Alternative solution barriers**
Awareness of approved Alternative Solutions not shared across Industry. Methods to justify are open to interpretation and misalignment of skills in filing and reviewing leads to delays. Innovation is desired but this is not a highly used portion of the pyramid.

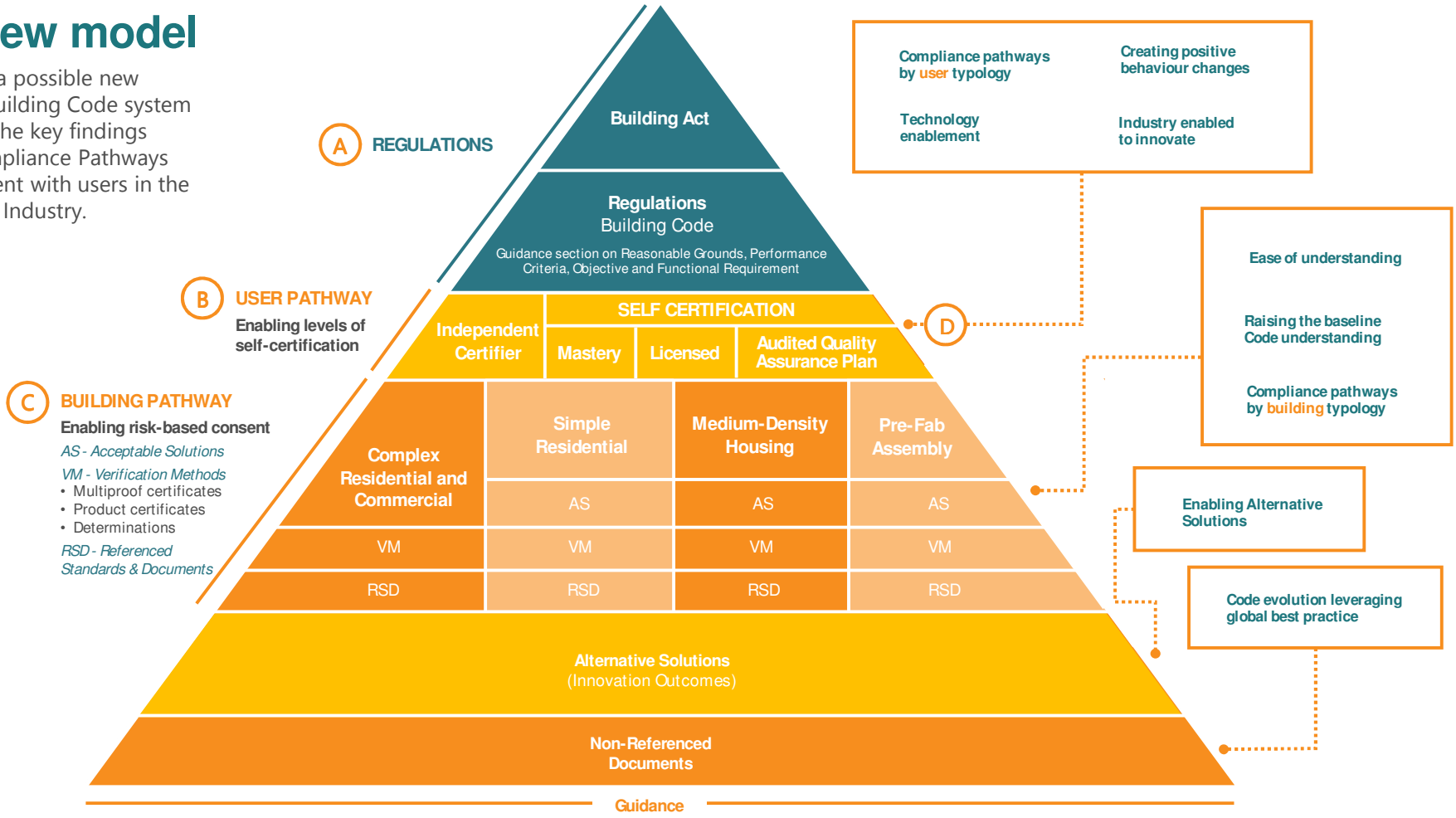
3 **Lacking Acceptable Solutions**
Acceptable solutions are non-existent in some emerging categories like Medium-Density Housing. They are predominant compliance pathway but they discourage innovation and are not being updated enough.

4 **Suboptimal shortcuts**
CodeMark is underutilized and the level of integrity is questioned by users. Multiproofs are currently not flexible enough and the Determination process slowing down the Code Compliance Certificate process.

5 **Interpretive Guidance**
This could be a significant amount of documents from a variety of sources and they open to interpretation so there is no guarantee it will be accepted by BCA.

Possible new model

This is a prototype of a possible new performance-based Building Code system model. It is based on the key findings from the Smarter Compliance Pathways project and engagement with users in the New Zealand Building Industry.



USABILITY IMPROVEMENTS

A Regulations restructure
The Building Act and the Building code remains largely unchanged. Code Clauses are restructured to provide clarity and guidance to compliance while also elevating the choice for innovation in the system.

B Pathways by user type
Allows the ability for a level of self-certification to be set. This will help to relieve the pattern of repetition and inefficiencies in the system. It will also allow for time to innovate and drive positive behaviours towards and maintaining quality.

C Pathways by building type
By structuring the system in this way, it allows for the alignment of related documentation to be clearly linked to the type of building work which is being done. This approach eases the understanding of the compliance requirements and provides a base on which to build a new digitally enabled Building Code.

This change reflects the future-focused building types that are being constructed and also allows systems for construction to be contained within its specialised category, allowing for efficiency, ease of understanding and less room for miscommunication.

D Layers of self-certification
Mastery – High knowledge of compliance and applicability.
Licensed – Covers both the building work and the associated certification of that work in combination with ongoing monitoring process.
Audited Quality Assurance Plan – Encompasses all building systems and the compliance of those to the Building Code.
Independent Certifier – A BCA either under the same structure and model as is current or redeveloped as outlined in the opportunity areas contained in this report.

Section four

KEY INSIGHTS - SYSTEM LEVEL

"A good experience of gaining compliance can be quickly followed by a bad one, it's like a lottery of who you're going to get."

The Scope vs the System

While there are significant opportunities to enable Smarter Compliance Pathways within the scope of this project, the importance of viewing consent and compliance from a system perspective was stressed to us time and again by participants. The insights that follow represent complex issues within the Building Code system communicated to us.

The natural tendency of participants was to look at the root causes of issues preventing efficiency, innovation and high-performance. Without addressing these underlying issues they thought the long-term efficacy of any pathway changes may be compromised.

The key system level insights were synthesised from the workshop and interview outputs:

- Stakeholder interview data
- The current and future state experience
- Opportunity areas
- Concept creation
- Underlying system principles

The following information is divided into:

- The key insight statement
- Supporting evidence from Industry representative perspective

Key Insights:

- Misalignment and imbalance
- Easy exits from accountability
- Fragmentation & frustration
- Differing goals across system users
- Innovation is not worth it
- Choice architecture drives unwanted behaviours

Key Insights - System Level

What we heard

There is a **misalignment and imbalance** of technical ability on both the Industry and BCA, especially in complex builds.

It is luck of the draw as to who will be the consenting officer and who is inspecting the building work. This can largely determine the success of a project.

Inexperienced designers and builders are being put on more complex project due to capacity issues in the Industry.

BCAs are tasked with a quality assurance role which is not their purpose.

There is a lack of technical ability at the BCA to deliver on Alternative Solutions which demotivates designers and architects from innovating.

The system allows for **easy exits from accountability** influencing users to question leadership.

Some members of Industry view that nothing will change without strong leadership. MBIE's view is that the Industry is empowered and the Industry and BCAs need to change.

Producer statements transfer the risk from BCA to supplier together with the ability for 'phoenix building companies' to firstly exist, go bust and rise up again.

An Industry rule of thumb exists that quality, cost and time can never be balanced.

- Fast + quality = expensive
- Cheap + quality = low priority
- Cheap + quick = acceptable.

Significant divides exist between innovative top performers and isolated, slow adopters in the building sector which leads to **fragmentation and frustration** for users.

Overseas models are a good source of data, Standards, methods, so why are we re-inventing the wheel?

Christchurch and Hamilton have good models of behaviour, why are these not widely shared and adopted?

The Industry makes the same mistakes and is slow to adopt new technology.

Key Insights - System Level

What we heard

The siloed nature of Industry roles inhibits collaboration and increases the dependence on one-to-one communication. This has a cumulative effect on the **differing goals across system users**.

New building methods and construction needs to be paired with knowledge enablement.

Broader Industry challenges (people, Industry-wide training and education) tended to feature in participants feedback first, and the Building Code second.

BCAs push for all data up front while architects want to get building stages underway quickly.

Innovation is an investment and is viewed as being **not worth the time and financial risk.**

Building Code Standards seen as a set of minimum targets to meet and not seen as aspirational or performance-based by a large portion of the Industry.

Repeatedly aversive stimuli leads to a mindset of learned helplessness. Contributing factors being: boom and bust cycles, limited skill and knowledge level, risk aversion and rising costs. In such a state, the leap to an innovation mindset is too big for most.

Choice architecture (the presentation of solutions to users) in the system **drives unwanted behaviours** and limits innovation.

The system punishes the use of Alternative Solutions through additional effort, time, cost and uncertainty that often does not match the benefit.

Objective and functional requirements sit above the performance criteria in layout of Building Code clauses causing users to jump straight to referenced standard.

Section five

SYSTEM INFLUENCES - FUTURE STATE

"So, what's the bigger picture?"

The interconnectedness of it all

The Building Code and pathway specific opportunity areas are influenced by a number of broader system factors. To successfully enable the opportunity areas and key shifts presented in this report, it is beneficial to consider how they relate to the overall system picture.

The broader system can be categorised by MBIE involvement, split into 'the sphere of control' and 'the sphere of influence.' The Building Code is MBIE's key control point.

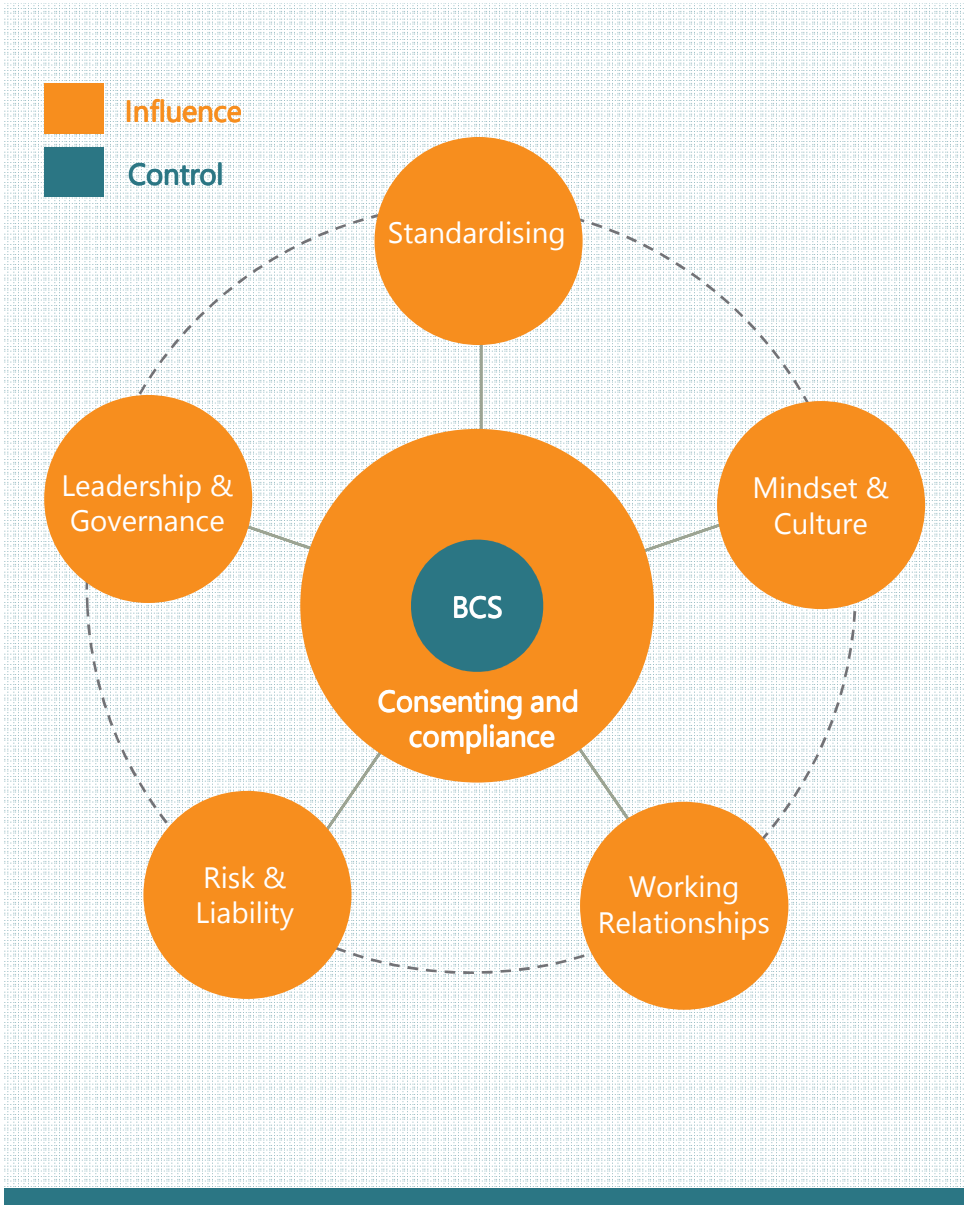
Where they came from?

The system influences are synthesised from the workshop participant inputs when creating their preferred future state. This included key principles they deemed necessary to bring forth to MBIE when considering changes to the Compliance Pathways themselves.

System Influences:

- Standardising
- Mindset & Culture
- Working Relationships
- Leadership & Governance
- Risk & Liability

System Influences



	Future state system influence	What it means for the Building Code system (BCS) and compliance pathways
Standardising	A nationalised approach to the process and documentation that reduces complexity, creates awareness and provides simplified and highly relevant information for the user.	Barriers to compliance exist beyond pathways themselves and largely due to a lack of unification across Industry, Councils and practices.
Mindset & Culture	Strong Industry engagement which is attracting and maintaining skilled talent. Industry players who look long term, focus on quality and continuous improvement.	The Building Code system is a complex system dependent on user behaviour and mindset impact heavily on efficiency and productivity.
Working Relationships	An Industry with common goals and shared responsibility committed to collaboration. There is strong transparent case management and alignment of skills.	For the Building Code system and compliance pathways to work efficiently requires the Industry to be accountable for its actions.
Leadership & Governance	MBIE actions and behaviour to set the bar for high performance, by creating effective policies and regulation for the Industry. A good balance of enforcement, incentives and enablement.	Strong leadership and clearly prescribed directions for system users underpins a complex but functional Building Code system and prevents it from falling into chaos.
Risk & Liability	Re-thinking the approach to risk with the supporting insurance structure. A wider Industry understanding and acceptance of risk with fair allocation for all parties.	Risk and liability is a central driver of human behaviour in the Building Code system and compliance pathways. Without it being address, innovation will remain stagnant.

Section six

APPENDIX

Supplementary information

The following information has been included to add depth to the main report content and support the focus area of the project. They can provide key context for MBIE to consider when making changes to the Building Code system and may contribute to other program initiatives.

Appendix contents:

A. Additional Points of View - Current State
   - Not directly related to the Building Code system and compliance pathways

B. System Influences - Future State
   - Additional participant content

Appendix A

ADDITIONAL POINTS OF VIEW - CURRENT STATE

not directly related to the Building Code system and compliance pathways

What we heard

The following pages communicate key themes that were outside of the project scope but derived from the interviews and workshops on the current state experience of the Building Code system and compliance pathways.

Nearly all of the participants viewed these as challenge areas to be addressed in order for the compliance pathways to be improved. These issues are often historical in nature and multi-faceted.

The purpose

These current state points of view (including Building Code system specific in Section 1) were built on through each regional workshop sessions to capture the voice of the participants. They were then used as a starting point for idea generation on 'how do we improve the current state?' and 'how do we envision these themes in the preferred future state?'

This also led to the understanding of the broader system influences (presented in Section 5) that are linked to Compliance through the user's overall experience as part of the Building Industry.

Key themes (outside of scope):

- Inconsistency
- Inefficiency
- Communication
- Knowledge Gaps
- Risk & Liability
- The Broader System

Additional points of view

Inconsistency

Inefficiency

Communication

Knowledge Gaps

Risk & Liability

The Broader System

Process
A positive experience can quickly be followed up by a negative one. It varies based on who you work with as a BCA and which council you apply to. It's "luck of the draw." This is the case for both Industry and BCA sides of the Consent and Compliance process.

Contributing to this is the interpretation nature of the regulatory documents and differing opinions on "Reasonable Grounds."

"Obstacles come down to the opinion of the person rather than technical detail."

Procedure
Inconsistencies exist in the process and paperwork as well as different application processes across councils. Industry needs clear deliverables for BCA requirements.

In addition, Certification of CodeMarks is seen by some as unreliable and only as good as the issuing company.

People
Compliance approval can often be more subjective than objective depending on the BCA's level of knowledge, interpretation of the building code and the viewpoint of the technical experts.

Consenting Officers and Building Inspectors may have different interpretation and furthermore, multiple Building Inspectors on a single project may also have differing opinions.

"It's the lack of consistency that haunts us."

BCA make-up and challenges
Some BCAs are operating at capacity with no slack in the system. BCA's can be understaffed and competing for resource with other sectors. This flows into challenges for training of staff.

"It depends on who you're dealing with at the BCA. There are different levels of expertise."

Additional points of view

Inconsistency

Inefficiency

Communication

Knowledge Gaps

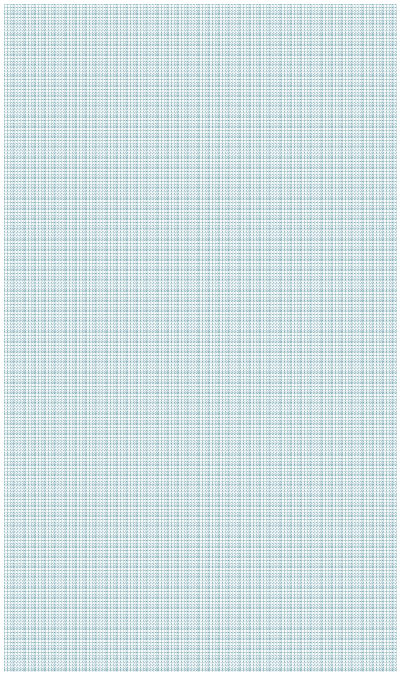
Risk & Liability

The Broader System

The local authorities
The inefficiency of dealing with multiple different councils within a region, all with different processes, was brought up several times from both builders and BCAs. This was also an issue with the various online application platforms. It was also stated that there is a massive amount of overhead with BCAs under council.

"Always the same system and components, we just put them together differently. Why can't we just get a structural engineer to sign off?"

80/20
If 80% of the build is the same as the last one but 100% of the application, consent and compliance inspections are required for effectively the same situation.



"There is just so much irrelevant information"

Streamlined Standards
There is a strong desire for limiting repetition of consent and compliance pathways once a method is completed completed and for it to be approved nationally.

"Go Shift (now Simplifi) is a step in the right direction."

Time is money
The layers and layers of peer reviewing and variation of RFIs add significant time, cost and frustration to the project.

"The process for getting newer products approved is a nightmare. If it's different, then it's difficult."

Additional points of view

- Inconsistency
- Inefficiency
- **Communication**
- Knowledge Gaps
- Risk & Liability
- The Broader System

Miscommunication and misalignment
A contributor to poor efficiency seems to be poor communication and miscommunication. A misalignment of technical minds on both the Industry and BCA side was a contributor and there was difficulty in getting issues resolved through email alone.

Timely communication and accountability are seen as an important factor to prevent miscommunication.

"We have regular meetings with the BCA to discuss what projects are underway and upcoming. We generally feel we have got the intent across in all cases."

Communication tools
BCAs provide checklists to the Industry but these are underutilised.

Online systems are not optimized and difficulty was noted in connecting over the phone.

Point of contact
When a consenting officer was assigned to a business, it improved the relationship and communication. There was a clear point of contact.

The alignment of understanding and strength of communication between the main contractor and BCO is vital.

Good BCAs are already using a case manager approach. There is a demand for more continuity.

"It goes into a black hole and you get an RFI back 20 days later."

Fragmentation
The Building Industry appears to be fragmented with each party focused on one little section.

Coordination is a challenge that effects clear communication channels.

There is a feeling that BCAs operate in silos and that there is an "us vs. them" paradigm.

Relationship building
Successful projects relied on great communication, relationship building and coordination between the client and BCA early and ongoing in the process, particularly when using alternative solutions.

"We need more collaboration and communication between architects, BCAs and builders. We need to work together."

Additional points of view

Inconsistency

Inefficiency

Communication

Knowledge Gaps

Risk & Liability

The Broader System

Education
We heard from BCA officers that they are often going over and above to educate the designers/builders and acting as a quality assurance check which is not their role.

Education System

There is a reliance on institutional knowledge and key people and many participants wondered how this would adapt for the next generation.

The system is seen as inadequate to properly train on the act and code for builders and designers. There is currently a gap in training on the Building Code system.

Expertise
The entire building industry was generally referred to as lacking experience, training and expertise across multiple areas.

It was indicated that a lack of expertise results from the Industry competing for staff with higher salaries, attracting the best people away from BCA roles. We heard that some BCAs do not cite or cannot cite building code clauses that an inspection failure relates to.

Eco-design advisors from Christchurch city council have been used to improve Standards.

"All we need is clear guidance and consistency across BCA's on Compliance."

Submission and review application
Requests for information (RFI) were occasionally seen as a way to intentionally slow the approval process down while BCOs credit that to poorly written applications, specifications and drawings.

Some design teams see an obligation to provide BCAs with detailed, high quality drawings and specifications as they understand a partnership approach helps productivity.

"The compliance paths don't need to change, it's education."

"The LBP scheme is in adequate in covering vital building sectors, we need among others a Licensed Waterproofing Practitioneer"

"Sometimes it is difficult to get a BCA to understand how your design will meet its objectives. They need specialist skills."

Expectations
Currently, BCAs are positioned as the experts, but they are not and it is an unrealistic expectation. However there was a call to have some more specialist skills in specific areas (seismic restraint, weather tightness).

Additional points of view

Inconsistency

Inefficiency

Communication

Knowledge Gaps

Risk & Liability

The Broader System

Risk aversion
There is little incentive for BCAs to encourage simplification of the consent/compliance process and innovation if they assume all the risk.

Another viewpoint was presented that the build holds all the risk and the BCAs have all the say.

Another view is that the Industry is reluctant to take on risk (e.g. architects not issuing PS1's and engineers not issuing PN22's). PS3s required trades to accept risk for design and products that they have no control over.

Resolution
Uncertain outcomes with alternative solution can hugely effect a project. Challenging inspection failures go through to determination and cannot be dealt with quickly and cost effectively.

Determinations sometimes are not made with the personal skill level required and therefore are not always correct.

The cost of variations is an impediment to better design solutions.

Last man standing
BCAs have a high level of liability and can rely on Acceptable Solutions to minimise risk.

There is a call to de-risk the local authorities to shift the attitude of risk aversity.

"If you can't deal with the risk easily and cost effectively, how are you going to access new methods and materials?

You end up doing what is easy, not always what is good."

Ownership
Architects, builders and fire safety designers are not taking responsibility for their own work.

CodeMark issuers are not responsible for product failures.

Additional points of view

Inconsistency

Inefficiency

Communication

Knowledge Gaps

Risk & Liability

The Broader System

System view
The building code is a system in and of itself that sits within a wider system, including unitary plans and civil defence plans. These systems cannot be viewed in isolation.

Government engagement
The government engagement level in implementing changes and providing leadership was strongly questioned.

There is an Industry view that MBIE is not the vehicle for change in the building Industry and an independent commission of enquiry is required to act on major changes.

Role of MBIE
There was a call for MBIE to take a larger role in leadership over the BCAs and ownership of tools, databases and resources on a national level.

It is hard to get consistency from BCAs when there is no Central Government template, platform and process.

There is Industry conflict between the perceived focus of this work on Smarter Compliance Pathways - KiwiBuild versus the system in general.

Major events
The role of major events such as the Christchurch earthquake and 'leaky buildings' were brought up as cultural shifts in how they affected the mindset of the owners, builders and BCAs.

There can be a knee jerk reaction to compliance levels based on national and international event. This can be problematic when all focus shifts to one aspect of a build.

"We have stopped going to government meetings because of too much head nodding."

Licensing
There needs to be Site Licenses responsible for building whole-of-life.

- Water proofing
- Tanking
- Passive Fire

LBP system has failed to raise the bar and has only increased compliance cost.

Cost as a barrier
Standards are locked behind a paywall.

Appendix B

SYSTEM INFLUENCES – FUTURE STATE

additional participant content

What these are

The following is a compilation of participant opinions, ideas, desires and opportunities for the future state as they relate to the wider system influences (discussed in Section 5) outside of the project focus. These statements have had minimal or no alteration.

It is owed to the participants of this research and users of the system that these additional perspectives are considered to better understand how we might create a better building and regulatory sector in New Zealand.

Why it matters

Zooming in and looking closer at these influences can surface underlying user behaviour that impacts the system as a whole.

Positively changing these system influences will enable the system shifts for the Building Code system and compliance pathways.

While they exist outside the 'sphere of control,' they are still useful to understand for those looking to make changes to the Building Code system. Again, these areas should not be viewed in isolation.

System influences:

- Standardising
- Leadership & Governance
- Risk & Liability
- Working Relationships
- Mindset & Culture

System influences – additional participant content

Standardising

Leadership & Governance

Risk & Liability

Working Relationships

Mindset & Culture

Standardised online user centred forms and applications across compliance documents that anyone can use and get correct. Based on blockchain technology to maintain consistency.

You can earn self-consenting privileges with a random auditing program integrated.

A centralised database for product specifications.

Automation of many design and review functions and full digital collaboration tools.

Up to date and real time updates to the code. Software type updates with lead in times.

One NZBCA as a national consenting authority. A pool of experts that work collaboratively and share knowledge.

One way to nationally submit a consent. A central pool of consents, can be processed by any council based on capacity and experience.

”One building, one consent.”

National specifications for product register.

System influences – additional participant content

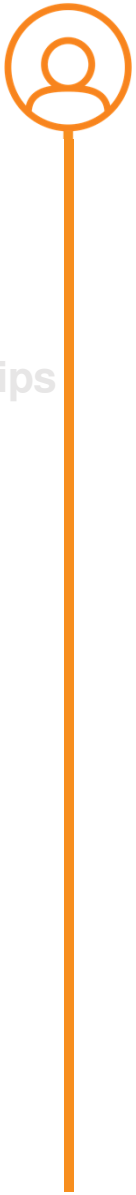
Standardising

Leadership & Governance

Risk & Liability

Working Relationships

Mindset & Culture



Extend LBP scheme to cover all building and maintenance work with increased qualification requirements.

MBIE leading and setting processing systems for BCAs.

MBIE has adequate knowledge in-house or outsourced.

MBIE stronger on industry and BCA monitoring and enforcement.

Licensing in all sectors underpinning clear responsibility matrix.

A fit for purpose, national training system for BCAs.

Rewards for good practice and lower risk behaviour - carrot policies.

Improved funding and training model for trades. Government support and financial incentivisation.

MBIE is more accessible for feedback and has an improved technical team with effective listening to build relationships.

Regulation to prevent bad behaviours with incentivisation to do above minimum.

Tough minimum standards by legislation and control with market driven higher standards.

System influences – additional participant content

Standardising

Leadership & Governance

Risk & Liability

Working Relationships

Mindset & Culture

New approach to who underwrites the risk that is competitive in terms of current BCA fees.

More auditing done by BCA when risk and liability is shared which will reduce inefficiency.

Introduce private BCA's as there is no political experience, more transparency and opportunity to carry less liability.

Risk and liability to be taught at university and trade schools with a more robust apprenticeship scheme.

A common understanding of how risk builds up. Reduce risk by research and education of practitioners on risk management.

No longer a "last man standing" approach with BCAs.

MBIE has some "skin in the game."

Proportional liability to spread the risk and create accountability.

Insurance tied to the building performance creates a market driven to higher standards.

Fair allocation of risk and a willingness to take on risk.

Compulsory liability insurance for contractors and coverage for subcontractors.

Statute of limitations on risk.

System influences – additional participant content

Standardising

Leadership & Governance

Risk & Liability

Working Relationships

Mindset & Culture

Standards and Amendments written in plain English and in collaboration with the Industry like codes of practice.

Succession plans in place to get new people into the industry for effective knowledge transfer.

Designers doing site time like engineers.

Minimised dependency on BCAs. Not just “give me the answer.”

A partnership approach with MBIE.

KiwiBuild utilised as a training platform that accounts for quality. Skill level is not watered down as a result of the program.

The next generation engaged, active and taking the industry forward.

Not ‘us vs. them.’ A teamwork focus with BCAs as part of the design team.

Collaborative approach with Industry and BCAs. More empathetic mindset for all parties.

An engaged insurance industry.

Strong case management with fewer points of contact. Having continuity with a contact person driving the project and following through.

Collaboration between BCAs with information sharing.

Pre-application meetings for:
- Early risk profiling
- Pathway definition and defines which checklist
- More certainty around consent.

Work tracker with everyone having a set of plans. Full visibility, trust and transparency between parties.

An engagement plan created with industry consultation. Roadmap provided and changes flagged well in advance to provide lead in time.

Collegial attitude across the sector with less fragmentation.

System influences – additional participant content

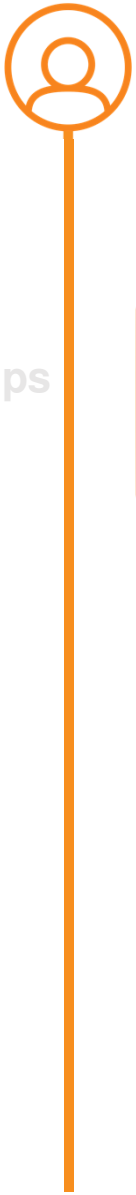
Standardising

Leadership & Governance

Risk & Liability

Working Relationships

Mindset & Culture



Solution not problem focused. Encouraging success as an industry.

Emphasise the whole of life cost of the building over lowest tender wins.

Making it desirable to be a BCO.

Proactive not reactive. Long term thinking, sustainability focus. Thinking of future generations.

Authentic and transparent industry engagement. Not the same old players.

Cheapest tender no longer a problem, both on design side and buyer side.

Subtrades and suppliers are system-based and know how to build a consented BIM.

Continued Professional Development (CPD) training throughout career.

No longer building to minimum standards. Incentivising a 'quality first' approach.

Enabling new thinking, experimentation and innovation.

The system reflecting the values of who we are as a nation.

Health, environment and sustainability policies the focus.

Transparency, impartiality, integrity and accountability built into the system.

Total compliance would lead to your company getting more work.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HIKINA WHAKATUTUKI

BUILDING PERFORMANCE

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