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ACCESSIBLE HOUSING THE WAY FORWARD

**RESPONSE TO THE AUSTRALIAN
BUILDING CODES BOARD
CONSULTATION RIS**

Submitted by:
Melbourne Disability Institute
Summer Foundation



Melbourne
Disability
Institute

SUMMER
FOUNDATION



Accessible Housing – The Way Forward

Response to the Australian Building Codes Board Consultation RIS

The Melbourne Disability Institute (MDI) and the Summer Foundation are pleased to provide this submission in response to the Australian Building Codes Board (ABCB) Consultation Regulation Impact Statement (RIS)¹. We have initiated three important pieces of research in response to the Consultation RIS, in order to further inform the ABCB and Ministers, viz: i) an independent review of the social cost benefit analysis; ii) a survey and interviews of people with disability that provide important new quantitative and qualitative data; and iii) an audit of accessible features in 20 new build, high volume house plans.

The RIS considers a number of options for setting minimum accessibility standards for housing, for potential inclusion in the 2022 National Construction Code (NCC).

Central to the RIS process being undertaken by the ABCB is a social cost-benefit analysis conducted by the Centre for International Economics (CIE), which considers the following options:

STATUS QUO

No changes to existing policy settings. This option is used as a baseline against which the costs and benefits of the other options are assessed.

OPTION 1

Accessibility standard, broadly reflecting Livable Housing Disability Guidelines (LHDG) silver standard, in the NCC applying to all new Class 1a (single dwellings) and Class 2 (apartment) buildings.

OPTION 2

Accessibility standard, broadly reflecting LHDG gold standard, in the NCC applying to all new Class 1a and Class 2 buildings.

OPTION 3

Accessibility standard, broadly reflecting LHDG gold standard (with some platinum features), in the NCC applying to all new Class 1a and Class 2 buildings.

OPTION 4

Accessibility standard, broadly reflecting LHDG Gold standard, in the NCC applying to all new Class 2 buildings only.

OPTION 5

A subsidy program to encourage additional availability of accessible rental properties.

Following these consultations, a Final RIS will be sent to Building Ministers from the Commonwealth, State and Territory governments for consideration and decision.



¹ We particularly wish to acknowledge the contributions to this submission of Ms Alicia Yon, Project Manager-Housing at MDI.

The issues covered in the cost-benefit analysis are complex and require careful judgements about many assumptions. However, an important over-riding principle is that where there are uncertainties (and in this case there are many) the analysis should always err on the side of social justice and opportunities for all citizens. In other words, equity considerations are important as well as estimates of efficiency. Both are an important aspect of optimising social welfare within available resources.

In the CIE analysis, their economists conclude that the costs of regulation would outweigh the benefits for all five options. CIE therefore recommended continuation of the current voluntary code. It is notable, however, that they make limited reference to equity considerations² and that their analysis does not include any qualitative analysis, even though the Office of Best Practice Regulation in their Guidance Note on Cost-Benefit Analysis³ states:

- ‘CBA [Cost Benefit Analysis] requires you to identify explicitly the ways in which the proposal makes individuals better or worse off.’⁴
- ‘You should report cost and benefit estimates within three categories:
 - monetised
 - quantified, but not monetised
 - qualitative, but not quantified or monetised.’⁵

It is notable that in the RIS commissioned by the ABCB to examine the costs and benefits of Changing Places, a qualitative analysis was included. This reflected the reality with the Changing Places RIS, that it was impossible to quantify all the benefits⁶, just as it with this RIS on Accessible Housing.

In that report Ernst and Young identified a number of qualitative benefits to people with disability, including improved quality of life, well-being and mental health outcomes and greater personal freedom and empowerment. For carers, they identified reduced stress from caring for a person with a disability and improved quality of life, well-being and mental health outcomes. For society, they identified better inclusivity and awareness.⁷

We have therefore commissioned a study designed to address the gap in the CIE analysis in both quantitative (but not monetised) and qualitative (but not quantified or monetised) data about the social, health and economic benefits of accessible housing and to ensure that best practice is followed in this RIS of accessible housing.

There are also important government policies to be considered, including the National Disability Strategy and the UN Convention on the Rights of Persons with Disability (UNCPRD), to which Australia has been a signatory since 2008.

Article 4 of the UNCPRD commits signatories to Universal Design, which means ‘... the design of products, **environments** [our emphasis], programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design’.

These are important social justice arguments which are examined by Dalton and Carter, as part of

² While the CIE report includes a benefit called “societal benefit”, the CIE constructs the associated conjoint analysis to measure the altruism of individuals associated with those with accessibility needs finding suitable housing. Matched against the government’s policy commitments to achieve equity and fairness, this is a narrow definition, both theoretically and in practice.

³ Office of Best Practice Regulation, Department of the Prime Minister and Cabinet, Cost-Benefit Analysis Guidance Note, February 2016

⁴ *ibid*, p4

⁵ *ibid*, p11

⁶ Accessible adult change facilities in public buildings, Regulation Impact Statement for decision 2018

⁷ *ibid*, p5 and 6

their analysis of the CIE Report and so adding further to the work commissioned by the ABCB.

In addition, we also provide an audit of accessible features in 20 new build, high volume house plans, which provides important insights into current practices, which suggests that accessible features are more common than the 5-10 per cent estimated by CIE, and information on current matching platforms and their potential to better match supply and demand of accessible housing.

Our recommendations, based on the independent assessments and research we have commissioned, are that Governments adopt Option 2, as the benefits clearly outweigh the costs, and explore the potential for Option 5 to be implemented for the next 10-15 years, while the stock of accessible housing grows through the implementation of Option 2.

These Options should be based on the current LHDG for accessible housing and should not be diluted, as described in draft changes to the NCC.

In addition, it is recommended that better use of the existing accessible housing stock is facilitated through a pilot in a local government area or jurisdiction that is proactive regarding accessible housing, using the existing infrastructure provided by the Housing Hub and/or Nest matching platforms.

Accessible Housing Research

More than a decade ago, at Kirribilli House, the leaders of the building industry committed to an aspirational target of all new housing being accessible by 2020. Nothing changed as a result of this voluntary approach and nothing will change if governments continue to rely on a voluntary code for accessible housing. MDI and the Summer Foundation have therefore initiated three important pieces of research to inform our response to the Consultation RIS.

1. REVIEW OF THE CIE REPORT

First, Mr Andrew Dalton, Director AdHealth Consulting (former Associate Professor, Deakin Health Economics, Deakin University) and Emeritus Professor Rob Carter, Deakin University (former Alfred Deakin Professor and Foundation Director, Deakin Health Economics) were engaged to examine the CIE report and advise on the extent to which the CIE report accurately presented the economic credentials of the proposed regulation.

Dalton and Carter have identified four key issues that individually have a large impact on the benefit-cost ratios reported. Taken together, they totally reverse the economic credentials of the regulation, compared with the findings in the CIE Report. In their technical report (see Appendix 1) Dalton and Carter also identify a series of minor points, together with the importance of social justice in welfare economics, which would provide additional value to implementing the regulation of housing accessibility standards.

2. SURVEY OF PEOPLE WITH DISABILITY

Second, Dr Ilan Wiesel, Senior Lecturer in Geography at the University of Melbourne, has undertaken a survey of people with disability that provides important quantitative (but not monetised) and qualitative (not quantified or monetised) data, to support Dalton and Carter's economic analysis. Dr Wiesel's report is at Appendix 2.

With over 1187 survey responses, and 45 in-depth interviews, the report presents some of the most comprehensive data ever collected in Australia about the lived experience of people with a disability living in accessible or inaccessible housing. It brings the voices of hundreds of Australians with disability into the RIS Consultation and the policy debate about the need for regulatory reform in housing accessibility standards. *Statements from respondents to the survey and from the in-depth interviews are included in 'break-out' boxes throughout this submission.* This study therefore provides important additional information consistent with the advice from the Office of Best Practice Regulation to include qualitative analysis in all Regulatory Impact Statements, when important elements cannot be quantified or monetised.

Key findings include: those on low incomes and renters are more likely to live in inaccessible homes; more than 80 per cent of respondents agreed with the statement "I can't visit friends and family whose homes are inaccessible"; individual's accessibility needs change over the life course, highlighting the need for houses which are as adaptable as possible; close to one-third of survey respondents reported that a lack of accessible housing had reduced their ability to work or their productivity; there is significant additional NDIS spending and reliance on informal supports because of inaccessible housing for self-care and home-care as well as mobility support; and, adverse mental health effects due to inaccessible housing are very high, with 71.7 per cent of people with high support needs and 50.0 per cent of people with low support needs living in inaccessible housing reporting worsened mental health and well-being.

3. AUDIT OF ACCESSIBLE FEATURES

Third, Dr Di Winkler, Mr Tom Greaves, Dr Andrew Martel and Mr Yizi Chen have undertaken an audit of accessible features in 20 new build, high volume house plans. The study found that many accessibility features are already incorporated into the most popular house designs being built in Australia, but not in a systematic way; demonstrates accessible features are basic elements of good house design for the general population; and, indicates the likely cost of including further accessible features to be fully consistent with the accessibility standards in new builds is very low. This report is at Appendix 3.

Given the high take-up of individual elements, and the consistent exceeding of minimum standards for some elements, this study suggests that the cost of accessibility has been factored into current designs to a significant extent already; however, not in a way that guarantees practical accessibility of the dwellings. Consequently, based on this new evidence, the costs of achieving full accessibility are likely to be lower than estimated by CIE with unchanged benefits.

**We look at design and think
oh yeah, just get him
through a door. But no, get
him through a door to get to
work, to get on the train.
That's what the right door
does, it provides an
opportunity. It's all about
opportunities. And that's
what design does.**

JACK'S
STORY

1. Review of the CIE Report

The report prepared by Mr Andrew Dalton and Emeritus Professor Rob Carter is entitled *Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code*. It provides a balanced review of the work by CIE, mentioning both its strengths and weaknesses.

In their view the CIE has provided a comprehensive and helpful analysis of a complex set of issues. However, Dalton and Carter believe that there are important methodological issues associated with the benefit-cost results reported in the CIE report with which they disagree. Most importantly, they identify four key issues that impact substantially on the results and their associated policy implications.

Of the four key issues, two relate to the principle of symmetry in the presentation of benefits and costs for a specified research question, study perspective and context. One issue relates to the elements included in the opportunity cost of space, while the last relates to the discount rate used in the net present value calculations, having regard to published reviews of appropriate methodology and practice.

They further identify a range of other considerations that have smaller impacts, but which taken together would also impact the overall economic credentials of the proposed regulation, plus discuss important social justice considerations in the definition of economic efficiency.

The four key issues identified by Dalton and Carter are:

1. THE CIE ‘PROBLEM-REDUCTION APPROACH’ OVER-COUNTS THE COST SIDE

The principle of symmetry requires that benefits and costs are reported in a way that avoids bias or confounding. This is a key principle identified by the Office of Best Practice Regulation⁸. If all the costs are counted then all the benefits should be counted, commensurate with the study viewpoint adopted. If only some of the benefits are counted, then costs should be presented in a symmetrical way – that is, calculated in full, but apportioned between those receiving the benefits. If only some of the costs are counted, then similar care is required to include only symmetrical benefits.

In the ‘problem reduction approach’ favoured by the CIE, all costs of the options are included, but only those benefits that result from improved access for those with housing access needs – both direct (problem reduction) and indirect (altruistic benefit) – are included. In this approach significant benefits that flow directly from improved design and functionality to the general community are not included.

Dalton and Carter see it as problematic to count all the costs of implementing each option, but only a component of the associated benefits. They argue that if the boundary around benefits is confined to those that flow from assisting a target sub-group, then the cost side needs to be apportioned accordingly between this target sub-group and the general population. To do

⁸ *ibid*, p3 where the guidance says: “Have the benefits and costs of all proposed options on business, community organisations and individuals been clearly analysed in a balanced and objective manner?” and later specifies that benefits should include “...all people living in Australia”.

otherwise would bias the benefit-cost relationship against the economic credentials of the target sub-group.

They also recommend that, while CIE prefers the ‘problem-reduction approach’, the broader ‘willingness to pay’ approach, correctly reported, is the more appropriate methodology to use in this social cost-benefit analysis.

2. THE CIE “WILLINGNESS TO PAY” APPROACH UNDER-COUNTS THE BENEFIT SIDE

In social benefit cost analysis, analysts are strongly encouraged to identify all costs and all outcomes across all stakeholders and to be transparent in their inclusion/exclusion decisions and associated measurement/valuation steps. CIE uses two approaches to identifying costs and benefits. These are a ‘problem reduction approach’ (covered in point 1) and a broader ‘willingness to pay approach’ (WTP) that focuses on the value of improved functionality to both those with accessibility needs and the general community. The costs identified in the two approaches are identical but there is little to suggest that the two sets of benefits (Tables 7.2 and 7.3 of the CIE Report) are mutually exclusive categories of benefit. Rather, the reverse is true. They cover different aspects of societal benefit and are complementary, with the main exception being reduced home modification costs in the ‘problem reduction approach’ and the minimal modification required to age in place in the ‘willingness to pay’ approach. This is summarised in Table ES2 from the Dalton and Carter report and to the extent that there is no overlap between the ‘benefits’, they are all additive. That is, a societal perspective should add consideration of both the potential resources savings plus the value of the improved accessibility.

Table ES1 (Dalton Carter Report) showing comparison of reported benefits in Table 7.2 and Table 7.3

Table 7.2, CIE Report		Table 7.3, CIE Report	
CBA Benefit - Problem Reduction Approach	Interpretation	CBA Benefit – Broader WTP Approach	Interpretation
Reduced falls	<i>The value of resource savings</i>	Getting in and out	<i>Value of aspects of accessibility</i>
Reduced time in hospital/transition care	<i>The value of resource savings</i>	Moving around indoors	<i>Value of aspects of accessibility</i>
Reduced costs associated with loneliness	<i>The value of resource savings</i>	Living with mobility on same level as an entrance	<i>Value of aspects of accessibility</i>
Reduced home modification costs	<i>The value of resource savings</i>	Minimal modification required for ageing in place	<i>The value of resource savings</i>
Reduced carer related costs	<i>The value of resource savings</i>		
Reduced incidence of moving	<i>The value of resource savings</i>		
Reduced premature/inappropriate entry to aged care	<i>The value of resource savings</i>		

Table Notes: Table 7.2 is from p.112, CIE Report, while Table 7.3 is from p.113, CIE Report.

Note that the value attached to altruism for each option was exactly duplicated in both Tables 7.2 & 7.3 and has been excluded from Table ES2. Of those shown in Table ES2, home modification costs is the only item of potential overlap.

3. THE ADDITIONAL SPACE HAS LASTING VALUE

The CIE cost-benefit analysis assumes that the additional space per dwelling (e.g. 0.48 sqm for Silver) is a sunk cost for the sole benefit of people with mobility impairments that has no lasting value or benefit. Added space, in any well-designed home, is added space and so the CIE cost-benefit analysis should be modified to incorporate the fact that the cost of the additional space required for more accessible housing has at least an equal resale value, i.e. 'capital gain' for improved design and utility. Importantly, the value of the space is the sum of both the enhanced functionality from improved accessibility (as estimated from the CIE WTP exercises), plus the enhanced capital value.

Further, in the CIE 'problem-reduction approach', they do not measure 'utility-in use', over and above problem-reduction benefits (e.g. reduced falls). In their suggested re-analysis, Dalton and Carter include a minimum combined estimate for capital gain and 'utility in use' as being the retained capital value of the additional space (equal to the market price at the time of purchase).

Put another way, everyone benefits from accessible design features. For example, wider doors and hallways, one stepless entry into the home and open plan design makes life easier for parents with prams, the very young and very old at risk of tripping on a step and people recovering from sports injuries and surgery. Accessible design features not only expand the user base but also make it easier and safer for everyone to move home, receive large parcels, get luggage in and out of the home and replace whitegoods and furniture.

Therefore, the CIE cost-benefit analysis should be modified to reflect the fact that the entire population derives benefit from the improved design and functionality of the proposed changes.

A similar powerful example of a regulatory change designed to benefit people with disability, but which has benefitted everyone, is the "Curb Cut Effect" – the wedge cut in an elevated curb to allow smooth passage between footpaths and roads. "Curb cuts" were an innovation implemented specifically for people with disability in the US in the 1940s. Kerb ramps were mandated in Australia in 1992 and now our entire population benefits – parents with prams, small children on tricycles, business travellers and tourists wheeling suitcases and workers delivering heavy goods to businesses and homes, runners, skateboarders and rollerbladers.

4. THE 7% DISCOUNT RATE USED IN THE COST-BENEFIT ANALYSIS IS TOO HIGH

The discount rate is a factor that is applied to allow a comparison between costs and benefits today and in the future to calculate the 'present value'. In this study, the discount rate assumption has a huge impact on the estimated benefit cost ratios because most of the costs are upfront and the benefits are in the future. Therefore, any reduction in the discount rate assumption will favour the benefit side more than the cost side. Most economists acknowledge that the prevailing bond rate is the best 'rule of thumb' for the discount rate and the current 30-year bond rate in Australia is 1.87%. Therefore, the CIE findings should be based on at most a 3% discount rate (not 7%); with the Dalton/Carter report providing the economic credentials in closer alignment with the Cost Benefit guidelines.



"We are shoved into a corner... it's not [about] how can we integrate people with disability into society but how can we reduce the cost of having them...there's no independence, choice and control in housing."

—
TENANT, PERTH

SUMMARY OF THE DALTON AND CARTER ANALYSIS

The table below shows the benefit-cost ratios in the CIE Report (Base Case benefit-cost ratios) and after adjustment. A ratio of less than 1.00 implies that the costs exceed the benefits, while a ratio above 1.00 implies that the benefits exceed the costs.

Benefit-cost ratios in the CIE Report and after adjustment using Dalton and Carter assumptions

	Option 1	Option 2	Option 3	Option 4	Option 5
1. Base case benefit-cost ratios in CIE report in RIS	0.77	0.14	0.11	0.09	1.00
2. Adjust for symmetry in cost and benefits using the WTP approach (25% overlap to allow for building modification being reflected in both approaches)	2.00	0.68	0.54	0.39	1.48
3. Symmetry applied to WTP approach (25% overlap), plus add capital value of space to benefit side	2.46	1.10	0.95	1.03	1.48
4. Add in effect of 3% discount rate to row 3.	2.99	1.34	1.16	1.26	1.81

SOCIAL JUSTICE

In addition, to examining the problem reduction and willingness to pay approaches to the cost-benefit analysis used by CIE, Dalton and Carter also identify important social justice arguments to support the regulation of accessible housing. They note that it is only in the world of perfect competition – which rarely if ever exists and certainly does not exist in the housing market in Australia - that societal welfare is maximised by summing individual welfare. This goes to the normative foundations of economics and associated elements included in the social welfare function. They conclude that the full extent of broader social justice considerations, including the obligations of governments to create the kind of society that citizens want, would not have been captured in the CIE WTP survey that assessed the altruism benefit.

Once social justice is added in, Dalton and Carter conclude that the economic credentials for all options considered by the CIE are considerably stronger than those presented in their report. While the CIE favoured continuation of a voluntary code, Dalton and Carter concluded that a social benefit code analysis based on their advice would underpin the case for adding a regulation to the National Building Code. **They argue that Option 2 (Gold standard) has particular merit as the most cost-effective of the options that achieve functionality for those elderly and/or disabled people in wheelchairs.**

COMPLEMENTARY OF OPTION 5 AND OPTION 2

Further, noting that the effects of the introduction of a Gold standard will take time to have an effect on the availability of accessible dwellings, Dalton and Carter recommend that Governments should also explore whether Option 5 (a subsidy program to encourage availability of accessible rental properties) should be introduced simultaneously with Option 2. They also noted that income constraints may limit the ability of the elderly and/or disabled people to obtain accessible housing as it enters the marketplace.

As noted above, the benefits of Option 5 exceed the costs, but as there will be overlapping benefits with Option 2, these should not be double counted. Further analysis of this point should therefore be undertaken utilising the CIE model. Furthermore, given that an effective and efficient market of housing for people with disability requires reliable and detailed information on accessible housing stock, an additional option that might be considered for analysis is a policy

package that includes an enhanced matching service between suitable housing and those with housing needs. Indeed, encouraging a match between the stock of accessible housing and those with accessible housing needs is central to the calculation of net benefit in practice.

CONCLUSIONS FROM THE DALTON AND CARTER REPORT

There are four key assumptions in the social cost-benefit analysis conducted by CIE that need to be adjusted to better reflect the measured costs and benefits. Changing these assumptions in the cost-benefit model tip the balance so that the benefits of changing the NCC outweigh the costs to the Australian community.

We therefore ask the ABCB and the Building Ministers' Forum to review the assumptions and, based on the analysis by Dalton and Carter, recommend that the NCC should be changed to make the LHDG Gold standard mandatory for all Class 1a and Class 2 buildings.

Further, noting that the effects of the introduction of a Gold standard will take time to have an effect on the availability of accessible dwellings, Governments should also explore whether Option 5 (a subsidy program to encourage availability of accessible rental properties) should be introduced simultaneously with Option 2. An additional option is a policy package that included an enhanced matching service between suitable housing and those with housing needs.



2. Lived experience and social, health and economic impacts of inaccessible housing

The qualitative study and survey by Dr Wiesel, entitled *Lived experience and social, health and economic impacts of accessible housing*, consists of two primary elements: an online questionnaire, which was distributed on 17 August 2020 and closed for responses on 28 August, and 45 in-depth follow-up interviews. The response to the online questionnaire was overwhelming, with over 1,178 responses.

The questions in the on line survey included: standard demographic information about the respondent, information about their disability and their housing situation, the accessibility standard of their home, and the impact of accessibility in their current home on the ability to perform domestic activities, ability to study, work or volunteer, need for paid or unpaid support, social and family relations, health and wellbeing and risk of being forced to move home.

The in-depth follow up interviews were conducted with 45 participants who expressed an interest and provided their contact details in the online questionnaire. The interviews were semi-structured, with the focus of questions adjusted to participants' individual circumstances. The themes covered in the interviews corresponded with those of the online questionnaire.

Key statistics and findings from the questionnaire are:

- The majority (73.6%) of respondents live in housing that does not meet, or only partly meets, their accessibility need. People with lower level of impairment were more likely to live in inaccessible housing, possibly because of ineligibility for funds for home modifications, social housing or specialist housing. People with lower income were more likely to live in inaccessible housing, due to affordability barriers to purchase or rent an accessible home, or to modify their homes. Private renters were most likely to live in inaccessible home (87.6%), but high incidence of inaccessible homes was also recorded for homeowners (71.5%) and social renters (74.8%). Although significantly more accessible than mainstream housing, partial inaccessibility was surprisingly high even in specialist disability housing such as group homes (47.1%) and supported residential services (46.2%).
- Compared to housing constructed to affordability standards, post-construction modifications were more likely to only partly meet people with disabilities' accessibility requirements. While close to half (46.6%) of survey respondents lived in homes that were modified, most of those (39.1%) reported these modifications met only some of their accessibility needs.
- When modifications are undertaken exclusively in the homes of people who have mobility restrictions, they are unable to visit the homes of their family and friends, resulting in significant social isolation.
- **80.8% of survey respondents agreed or strongly agreed with the statement "I can't visit friends and family whose homes are inaccessible".**
- The reliance on modifications restricts people with disabilities' residential mobility, as the majority of dwellings are inaccessible. People who have already made a substantial

investment in modifying their residence are discouraged from moving home when their household or employment circumstances change.

- **Individuals' accessibility needs change over the life course, due to ageing, injuries (often due to inaccessibility of homes), and deterioration of impairments, requiring ongoing modifications, highlighting need for houses as adaptable as possible, such that they can continue to be modified more effectively and cheaply over time.**
- The proportion of survey respondents who lived in housing that was built in a way that meets all their accessibility needs (18.7%), was more than twice as high as those who lived in housing modified to meet all their accessibility needs (7.4%), demonstrating that building to accessible standard is more effective than post-construction modifications.
- Survey respondents living in homes that were not modified or only partly modified, reported inaccessible housing features further limited their ability to move into and out of their home, and perform self-care and home-care activities. Home care activities (such as home cleaning) were most limited by housing design, and movement inside the home was the least limited. Inaccessible housing was more limiting for people with high severity impairment, especially in relation to movement inside the house and home care activities.
- **Close to one-third of survey respondents reported lack of accessible housing has resulted in job loss, missed job opportunities, reduced work hours, or reduced productivity at work.**
- **Many survey respondents and interview participants reported difficulties finding accessible homes close to employment opportunities, while fatigue from living in inaccessible home and the additional time and energy spent on self-care and home-care, reduces productivity, motivation, self-confidence and capacity to work, study or volunteer.**
- Inaccessible housing increases support needs for most (65.8-67.1%) of people with disability with high support needs, including both paid and unpaid support. Just over half (51.2%) of people with low support needs living in inaccessible housing reported an increase in need for informal care, and 42.0% of those reported an increase in paid disability support.
- Approximately a quarter (23.0-27.8%) of people with high support needs, and a fifth (20.0-18.8%) of people with low support needs living in accessible or modified homes reported a decrease in their support needs thanks to accessible design.
- **Participants reported spending high proportions of their NDIS support funding on support for self-care activities they could have done independently in more accessible homes.**

- Unnecessary reliance on paid or informal support for such activities is not only economically ineffective, but bears additional social and health costs, such as adverse impacts on relations with family members providing informal care; impact on employment opportunities (e.g. reliance on availability of support to be able to get organised in the morning for work); and sense of independence and dignity.
- **Housing accessibility or inaccessibility has significant impact on self-reported mental health and wellbeing. 60.0% of people with both low and high support needs living in accessible housing reported improved self-reported mental health and wellbeing, thanks to the accessibility of their home. In contrast, 71.7% of people with high support needs, and 50.0% of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing.**
- Participants with high support needs living in inaccessible homes were more likely to express concern about risks such as difficulty affording necessary home modifications in the future (85.7%), being forced to move to another residence (68.0%), or to a nursing home (58.9%). This compares with a minority of people living in accessible homes who reported similar concerns, indicating that accessible home significantly reduces such risks. However, concerns about ability to afford home modifications remains a concern even for those living in accessible homes (47.5% of those with high support needs, and 44.2% of those with low support needs) indicating that needs change over time, highlighting the importance of adaptable housing.
- The shortage in accessible housing significantly limits housing choice for people with disability, especially those with high support needs. Nearly half (48.1%) of people with high support needs living in inaccessible homes, and close to a third (30.7%) of those living in accessible homes, reported a desire to move home but being limited by difficulty finding accessible housing elsewhere. Difficulty finding accessible housing was the key barrier to moving home.

The report concludes that:

- 1) Existing strategies such as a voluntary building code, reliance on home modifications or provision of accessible social housing have failed to deliver accessible housing for most people with mobility restrictions. Building all new homes to accessible standard will be the most effective way to address the shortage in accessible housing.
- 2) The impact of inaccessible housing on the dignity, freedom, social inclusion, health and workforce participation is profound, and the report presented robust quantitative and qualitative evidence of these. Such impacts must not be measured exclusively in dollar value; rather, the social justice argument for addressing the indignities experienced by people with disability must be front and centre to the RIS Consultation considerations.
- 3) Notwithstanding the above, the data indicates the CIE RIS Consultation report has underestimated the economic costs of inaccessible housing, by ignoring impacts on workforce participation and productivity of people with disability; underestimating the impact on paid and unpaid support needs; underestimating the negative impacts on

mental health and wellbeing; and, underestimating the extent to which a shortage in accessible housing limits housing mobility.

- 4) The range of domestic activities for which paid support is provided, and which can be reduced by accessible housing is broader and more significant than estimated by CIE. The CIE only focused on paid and unpaid assistance with mobility tasks⁹, whereas inaccessible housing also significantly increases need for assistance with self-care and home-care. Furthermore, in estimating the impact on support needs, the CIE excluded those living in housing that has already been modified due to disability or age, assuming that modified housing is fully accessible¹⁰. However, the qualitative survey shows that most people whose homes have been modified, consider these modifications to only partly address their needs, and they too require additional paid or unpaid support due to inaccessible homes.

Rowena's chronic fatigue syndrome causes debilitating fatigue and limits the amount of energy she can expend over a day. Each time she enters or exits her home means another activity that she needs to forego (e.g. washing up or spending time with friends or family).

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ROWENA'S
STORY

Entering and exiting without a rolling chair demands too much effort and is so time consuming and exhausting that she skips showering when she needs to go out in the morning. This gives rise to anxiety about her hygiene and odor throughout the entire day and restricts her ability to work outside the home.

—
EDNA'S
STORY

⁹ The CIE Proposal to include minimum accessibility standards for housing in the National Construction Code, July 2020, p140

¹⁰ *ibid*, p140

3. Audit of Accessible Features in New Build House Plans

The audit of accessible features in new build house plans by Dr Di Winkler & Mr Tom Greaves¹¹ and Dr Andrew Martel & Mr Yizi Chen¹²:

1. tests the hypothesis that some accessibility features are already incorporated into the most popular house designs being built in Australia, but not in a systematic way that makes all new builds accessible
2. demonstrates that accessibility features are basic elements of good house design for the general population, and not the features commonly seen in public accessible toilets and institutions, and
3. indicates the likely cost of including accessibility features in new builds.

The audit of 20 homes (maximum of three per developer) involved photographing, measuring, and assessing the presence of elements outlined in Livable Housing Australia (LHA)'s Silver, Gold and Platinum levels of design in these new builds. These three levels were determined by using the LHA's 15 Livable Housing Design Elements, most of which are included in the CIE Consultation RIS.

“

“Accessible housing is not just about handrails and ramps for some people, it is about housing for all people that meets their changing needs over their life time.”

—
HOMEOWNER, ADELAIDE

¹¹ Summer Foundation Ltd

¹² University of Melbourne

HOUSING AUDIT

The results are summarised in the table below and it is notable that all homes assessed had at least six of 15 LHA elements incorporated into their design. More than half of the homes had eight or more LHA elements, i.e. over half the homes incorporated over half the LHA elements and nine of the homes have five or more Platinum elements.

Display homes and their compliance with the 15 Livable Housing Design Elements

	Livable Housing Design Elements														
Dwellings Assessed	Doors	Toilet - front	Shower	Toilet - walls	Laundry	Stairs	Corridors	Kitchen	Entrance	Switches	Bedroom	Access	Windows	Taps & handles	Living
	E3.1	E4.2	E5	E4.1	E9	E7	E3.2	E8	E2	E11	E10	E1	E14	E12	E13
Henley (Palace)															
Porter Davis (Madison)															
Metricon (Sentosa)															
Burbank (Kelly)															
Porter Davis (Midland)															
Burbank (Fitzgerald)															
JG King (Carson)															
Carlisle (Crompton)															
Henley (Vienna)															
Metricon (Fortitude)															
Porter Davis (Charlton)															
Carlisle (Sorrento Grand)															
JG King (Melrose)															
Boutique (Rivera)															
Simmons (Hann)															
Dennis Family (Balmoral)															
Dennis Family (Robinvale)															
Homebuyers (Empire)															
Metricon (Regan)															
Simmons (Belthorpe)															

Table Notes: E1: Dwelling Access. E2: Dwelling Entrance, E3.1: Internal Doors, E3.2: Internal Corridors, E4.1: Width between walls either side of closet toilet, E4.2: Space in front of toilet, E5: Shower (Accessible ground level), E6: Reinforcement of Bathroom Walls, E7: Internal Stairways, E8: Kitchen Space, E9: Laundry Space, E10: Entry Level Bedroom Space, E11: Light Switches and Power-points, E12: Door and Tap Hardware, Family Living Room Space, E14: Window Sill Height, E15: Non-Slip Flooring (Note that the study methodology does not allow analysis of E6 or E15)

Legend

	Platinum Level
	Gold Level
	Silver Level

The findings suggest that many of the individual requirements to comply with Option 1 are already present in new builds and are accepted industry practice. However, they are incorporated into the designs in a random way that does not make the dwellings consistently accessible. For example, 95% of the dwellings complied with either Dwelling Access (E1) or Dwelling Entrance (E2) requirements, but few (20%) included both – yet both are essential for someone with a mobility impairment entering a home.

To qualify for Option 2 (Gold), building plans must meet 12 design elements of the LHA Guidelines. This includes the five elements that constitute Option 1 (but at a Gold, not Silver standard), plus Element 5 and Elements 6 to 12. In reference to Elements 6 to 12, all of the buildings in the sample included at least three of these in their designs – that is, 20% of dwellings had three-elements; 60% had four-elements; and 20% had five-elements. However, similar to the situation with Option 1 compliance, no building plan included all of the additional Option 2 elements. Nevertheless, it is notable that compliance with accessibility standards is significantly higher than suggested in the CIE Report, which states “[p]revious estimates and stakeholder feedback suggest that around 5-10 per cent of new stock current meets LHDG silver standard”¹³.

When considering the space standards of elements that are common to all houses – including bedrooms, kitchens, living rooms, and bathrooms – the 20 audited homes demonstrated that current industry practice is capable of routinely meeting space standards at the Gold level. This is consistent with the conclusion from Dalton and Carter, in their analysis of the CIE Report that additional space has lasting value.

The study by Winkler, Greaves, Martel and Chen also suggests that consistently incorporating accessible features into the building code for all new dwellings would not be a significant impost on volume builders of residential housing in Australia; particularly when combined with a simple, transparent and timely process for obtaining an exemption based on the gradient and/or size of a house block.

The country’s biggest builders are already incorporating most of these features in some new builds because they are consistent with good design. In fact, the audit of 20 display homes found that *all* the house designs had at least five elements that complied with either the Gold or Platinum levels.

However, a notable example of widespread non-compliance is the width of internal doors; the stand-alone option most favoured by the CIE analysis of costs and benefits (Option 1). But changing the standard width of doors is a common-sense change that is effectively cost neutral. This was a major conclusion in The Report of the Accessible Housing Taskforce provided to the Victorian Government in 2006¹⁴.

The findings of this study therefore support the idea that well-designed housing that works for people with mobility impairments does not compromise the design of housing for the general population – rather it enhances the built environment.

¹³ The CIE Proposal to include minimum accessibility standards for housing in the National Construction Code, July 2020, p96

¹⁴ Private communication between Bruce Bonyhady, Executive Director MDI and Laurence Joseph, Chair of the Accessible Housing Taskforce.

Accessible Housing drafting of proposed NCC changes

The CIE cost-benefit analysis is based on detail cost estimates provided by the quantity surveyors of Donald Cant Watts Corke (DCWC)¹⁵.

The accessibility standards included in the DCWC report include a continuous path with no step to the front door of the building, internal changes in floor levels within the dwelling of no more than 5 mm and internal doorways with a minimum opening of 850 mm. As noted in the DCWC report, all of these standards are consistent with the Gold LHDG standard.

However, in the draft proposed changes to the NCC to allow for accessible housing, it is proposed that the path to the front door of dwellings will be allowed to include one step, internal changes in floor levels within the dwelling of up to 25 mm will be permitted and that doorways will be allowed to have a minimum opening of 800 mm.

Given that the benefits of the Gold standard exceed the costs based on the LHDG Gold standard in the Dalton/Carter Report, there is no basis for permitting any reduction in accessibility standards as is currently proposed in the draft NCC changes.

“

“...because my housing is inaccessible I have basically \$25,000 a year [NDIS] funding purely to supervise me showering, which would be completely unnecessary if I had an actual accessible bathroom.”

—
SOCIAL HOUSING TENANT,
MELBOURNE

“

"It has to be a system that is equitable and realistic... when you actually go to somebody's house and see what the access is like within it, it has huge implications on how they live and how they get around."

—
HOMEOWNER, SYDNEY

¹⁵ Donald Cant Watts Corke Accessible Housing: Estimated Cost Impact of Proposed Changes to NCC, Report Revision 5 – 22 June, 2020

Making better use of existing accessible housing stock

An effective and efficient market of housing for people with disability requires reliable and detailed information on accessible housing stock. There are two large online platforms in Australia that support two-sided matching for housing seekers with a disability and housing providers. Both Nest¹⁶ and Housing Hub¹⁷ list vacancies and obtain information about the housing needs and preferences of housing seekers. The initial pilot version of the Housing Hub was developed in 2017 by the Summer Foundation with support from the Australian Government Department of Social Services Sector Development Fund. The majority of dwellings currently listed on these sites is Specialist Disability Accommodation (SDA), rather than private housing for sale or lease. The Housing Hub currently lists 507 SDA properties and non-SDA properties.

Better data is needed on accessible private housing in Australia that includes reliable information about the level of accessibility. In some jurisdictions, accessible and affordable housing is already being routinely built in new residential developments due to inclusionary zoning. There are also many dwellings that are modified substantially for occupants with mobility limitations. Significant home modifications are funded with public money via the NDIS, health, local councils and work and accident compensation schemes. However, once the occupant with a disability moves on, these accessible dwellings are sold and leased to the general population. There is currently no process for identifying accessible private housing and matching this stock to buyers or tenants with mobility limitations. A comprehensive register of adaptable housing in Australia has the potential to make better use of existing accessible housing stock.

The development of a register of existing stock and a strategy for maintaining this register is likely to involve collaboration across a range of entities and government agencies, including the Real Estate Institute of Australia, Livable Housing Australia, NDIS, Summer Foundation, state work and accident compensation schemes, large developers, access consultants and State governments. A logical starting point for the development of a register is a pilot in a local government area or jurisdiction that is proactive regarding accessible housing, using the existing infrastructure provided by the Housing Hub and/or Nest matching platforms.

Without somewhere to shower or sleep, good *** luck trying to hold
down a job or focus on other things.

ON TIME AND ENERGY AVAILABLE FOR
WORK

¹⁶ Available at: <https://gonest.com.au/>

¹⁷ Available at: <https://www.housinghub.org.au/>

Concluding Remarks

In summary, MDI and the Summer Foundation have commissioned three important pieces of research in response to the Consultation RIS on accessible housing, in order to further inform the ABCB and Ministers:

1. an independent review of the social cost benefit analysis undertaken by CIE
2. a study entitled, *Lived experience and social, health and economic impacts of accessible housing*, which includes 1187 survey responses and 45 in-depth interviews, providing some of the most comprehensive data ever collected in Australia about the lived experience of people with a disability living in accessible or inaccessible housing, and
3. an audit of accessible features in 20 new build, high volume house plans.

We have also provided additional information on the potential for the current matching platforms, Housing Hub and Nest, to be utilised to better match supply and demand for accessible housing.

Based on these independent assessments and research, we recommend Governments and the ABCB:

1. adjust the NCC to set minimum mandatory accessibility standards, broadly reflecting the LHDG gold standard, for all new Class 1a and Class 2 buildings (Option 2)
2. explore the potential for a subsidy program to encourage availability of accessible rental properties (Option 5) to be implemented over the next 10-15 years, while the stock of accessible housing grows through the implementation of Option 2
3. ensure the new accessibility housing standards are based on the current LHDG and not the diluted version, as described in the draft of proposed changes to the NCC, and
4. initiate a pilot to make better use of the existing accessible housing stock using the existing infrastructure provided by the Housing Hub and/or Nest matching platforms.



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Appendix 1

Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code

Prepared by:

Andrew Dalton, Director AdHealth Consulting

(former Associate Professor, Deakin Health Economics, Deakin University)

Emeritus Professor Rob Carter, Deakin University

(former Alfred Deakin Professor and Foundation Director, Deakin Health Economics)

Economic advice prepared to assist with responses to the Consultation Regulation Impact Statement on minimum accessibility standards for housing in the National Construction Code

Prepared for
The Melbourne Disability Institute, University of Melbourne and the
Summer Foundation

18 August 2020

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1. Executive Summary

1.1. Introduction and overview

We were engaged by the Melbourne Disability Institute and the Summer Foundation in late July 2020 to assist them in responding to a Regulatory Impact Statement (RIS) Consultation document released by the Australian Building Codes Board (ABCB) at the request of the Australian Building Ministers Forum. More specifically, our task was to advise on the economic credentials of a possible regulation to include minimum accessibility standards in the National Building Code, particularly because the ABCB consultation documents included an extensive 292-page social benefit cost analysis prepared by the Centre for International Economics (CIE), an independent consultancy firm.

In our view the CIE has provided a comprehensive and helpful analysis of a complex set of issues. Two key sets of cost/benefit results are presented in the Report; namely those based on: i) 'a problem reduction approach' targeted on those with housing accessibility needs; and ii) a broader societal approach based on 'willingness-to-pay' analysis, which includes benefits to the general community from improved design and accessibility.

Based on our assessment, we conclude that there are important methodological issues associated with the benefit-cost results reported in the CIE report that warrant further consideration. First, we cover four key issues that impact substantially on the results and their associated policy implications. We start with the 'problem reduction approach' favoured by the CIE, then cover the broader WTP approach that we favour. After that we briefly mention a range of other considerations that have smaller impacts, but which taken together would also impact the overall economic credentials of the proposed regulation. Of the four key issues, two relate to the principle of symmetry in the presentation of benefits and costs for a specified research question, study perspective and context. One issue relates to the elements included in the opportunity cost of space, while the last relates to the discount rate used in the net present value calculations, having regard to published reviews of appropriate methodology and practice.

It is also important to note that maximising 'societal welfare' with available resources is at the heart of the economics discipline, reflecting its origins as a part of philosophy. Defining what 'societal welfare' means raises the normative foundations of economics, but simply put, it involves what kind of society we want to live in. Inclusion of social justice, fairness and equity is very much part of what we have called 'big E' efficiency in Section 2. We were pleased, therefore, to see that the CIE Social Benefit Cost Analysis included a measure of societal benefit in both its 'problem reduction' and broader 'willingness-to-pay' approaches to net benefit. In Section 2 of our report, however, we conclude that the method they applied, focused on individual altruism, was unlikely to have captured the societal benefit from a government perspective in meeting its policy commitments in the housing and social welfare area. To the extent the CIE estimate under-estimates the true societal benefit, it further under-estimates the economic credentials of the regulation.

1.2 The principle of symmetry in the reporting of costs and benefits

In social benefit cost analysis analysts are strongly encouraged to identify all costs and all outcomes across all stakeholders and to be transparent in their inclusion/exclusion decisions and associated measurement/valuation steps. The principle of symmetry requires that benefits and costs are reported in a way that avoids bias or confounding. If all the costs are counted then all the benefits should be counted, commensurate with the study viewpoint adopted. If only some of the benefits are counted, then costs should be presented in a symmetrical way – that is, calculated in full, but apportioned between those receiving the benefits. If only some of the costs are counted, then similar

care is required to include only symmetrical benefits. In making these methodological choices, due regard must be given to viewpoint(s) from which the analysis is conducted. To do otherwise would not fairly represent the balance between benefits and costs inherent in the role of economic analysis.

Of the two approaches they present, the CIE prefers the ‘problem reduction approach’. The CIE did not favour their broader WTP approach as they argued that:

“...this approach implies that the proposed regulatory options deliver a lot of benefits without solving any immediate problem.” (Extract, p10, CIE Report)

As set below, we argue that the CIE results do not provide a symmetrical view of the benefits and costs inherent in the two approaches. With this in mind, we prefer the broader WTP approach. We initially consider the ‘problem-reduction approach’, but then focus our re-analysis on the broader WTP approach.

1.3 Problem 1: The CIE ‘problem reduction approach’ over-counts the cost side

In the ‘problem reduction approach’ all costs of the options are included, but only those benefits that result from improved access for those with housing access needs – both direct (problem reduction) and indirect (altruistic benefit). In this approach significant benefits that flow directly from improved design and functionality to the general community are not included (shown in Table 7.3 of the CIE report). In our view, it is problematic to count all the costs of implementing each option, but only a component of the associated benefits. So if the boundary around benefits¹ is confined to those that flow from assisting a target sub-group, then the cost side needs to be apportioned accordingly between this target sub-group and the general population. To do otherwise would bias the benefit-cost relationship against the economic credentials of the target sub-group.

Set out below in Table ES1 are the benefit cost ratios for each option with this adjustment applied. Options 1 and 5 are now showing a ratio >1 (i.e. benefits > costs), while options 2, 3 and 4 remain with a ratio <1 (i.e. benefit < cost).

Table ES1: Benefit-cost ratios adjusted to achieve symmetry in ‘problem reduction’ approach

Dalton/Carter re-analysis of benefit-cost ratios	Option 1 Silver	Option 2 Gold	Option 3 Gold +	Option 4	Option 5 Subsidy
Problem-Reduction Base case benefit-cost ratios in CIE report	0.77	0.14	0.11	0.09	1.00
Cost apportionment reduced by 60% to reflect benefits flowing to the general community from improved design	1.29	0.23	0.19	0.14	1.67

Table Notes: Refer Section 3 for further detail. Where the benefits in dollar terms are greater than the costs in dollar terms, the benefit-cost ratio is >1. These results are shown with green highlight.

¹ Assessment of benefits includes three steps: i) identification of benefits relevant to the study perspective(s) and evaluation method; ii) measurement of the extent of the benefit; and iii) valuation in dollar terms. As analysts move through these three steps, some identified elements of benefit may be excluded (e.g. when multiple perspectives are used, insufficient data available to measure, benefit too insignificant to matter, etc.). Principles guiding these three steps include clarity about inclusion/exclusion and time horizon, symmetry across benefits and costs, clarity about attribution and apportionment in the presence of joint or common elements. While social cost benefit analysis is intended to include all benefits irrespective of to whom soever they accrue, it is not unusual for narrower boundaries to be applied. When this occurs the principle of symmetry is particularly important.

1.4 Problem 2: The CIE 'willingness to pay' approach under-counts the benefit side

The CIE report also includes a broader approach focussed on societal net benefit. In a full social cost benefit analysis such as this, the normal expectation is that all costs and benefits are included, irrespective of to whomsoever they accrue. The CIE report explains that:

“The key difference between this approach and the problem-reduction approach is that this approach includes, for Options 1-4, benefits to households that do not currently contain any persons with limited mobility” (p.114, RIS).

Whereas the benefits listed in Table 7.2 describe cost-offsets² (savings), particularly to Government, plus society's WTP for altruism arising from more equitable access, the benefits in Table 7.3 describe the benefits of enhanced accessibility plus WTP for altruism. The value attached to altruism for each option is the only item that is clearly duplicated in both Tables 7.2 & 7.3. The remaining items are shown in Table ES2. In our view there is little to suggest that the two sets of benefits are mutually exclusive categories of benefit – rather the reverse is true - that they cover different aspects of societal benefit and are complementary. To the extent that there is no overlap between the 'benefits' listed in Table ES2, they are all additive. That is, a societal perspective should include consideration of both the potential resources savings plus the value of the improved accessibility.

Table ES2: Comparison of reported benefits in Table 7.2 (problem reduction approach) and Table 7.3 (broader WTP approach of the CIE report)

Table 7.2, CIE Report		Table 7.3, CIE Report	
CBA Benefit - Problem Reduction Approach	Interpretation	CBA Benefit – Broader WTP Approach	Interpretation
Reduced falls	<i>The value of resource savings</i>	Getting in and out	<i>Value of aspects of accessibility</i>
Reduced time in hospital/transition care	<i>The value of resource savings</i>	Moving around indoors	<i>Value of aspects of accessibility</i>
Reduced costs associated with loneliness	<i>The value of resource savings</i>	Living with mobility on same level as an entrance	<i>Value of aspects of accessibility</i>
Reduced home modification costs	<i>The value of resource savings</i>	Minimal modification required for ageing in place	<i>The value of resource savings</i>
Reduced carer related costs	<i>The value of resource savings</i>		
Reduced incidence of moving	<i>The value of resource savings</i>		
Reduced premature/inappropriate entry to aged care	<i>The value of resource savings</i>		

Table Notes: Table 7.2 is from p.112, CIE Report, while Table 7.3 is from p.113, CIE Report.

Set out below in Table ES3 are the benefit cost ratios for each option with altruism counted once only and different assumptions about the degree of overlap applied. The only apparent area of overlap relates to resource savings from home modifications, which appears in both lists. We favour the no overlap/ 25% overlap results as most items listed are clearly different, but more conservative assumptions are also shown. Options 1 (Silver) and 5 (Subsidy) are now showing significantly improved

² These cost-offsets include reduced falls, reduced time in hospital/transition care, reduced costs associated with loneliness, reduced home modification costs, reduced care-related costs, reduced incidence of moving, and reduced/inappropriate entry into aged care.

ratios >1, while options 2 (Gold), 3 (Gold +) and 4 (Gold, Class 2 only) show improvement but remain with a ratio <1 (i.e. benefit < cost). Option 2 however (Gold standard), which caters for improved wheelchair accessibility and movement, is now much closer to benefits equalling costs.

Table ES3: Benefit-cost ratios adjusted to achieve symmetry in the ‘willingness-to-pay’ approach

Dalton/Carter re-analysis of benefit-cost ratios	Assumptions re. benefits from CIE Report Tables 7.2 & 7.3				
	Option 1 Silver	Option 2 Gold	Option 3 Gold +	Option 4	Option 5 Subsidy
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Benefits overlap 75%	1.18	0.32	0.26	0.19	1.16
Benefits overlap 50%	1.59	0.50	0.40	0.29	1.32
Benefits overlap 25%	2.00	0.68	0.54	0.39	1.48
No overlap of benefits	2.41	0.86	0.68	0.49	1.64

Table Notes: Refer Section 3 for further detail. Where the benefits in dollar terms are greater than the costs in dollar terms, the benefit-cost ratio is >1. These results are shown with green highlight.

Moving from the symmetry principle, we now consider the way in which the opportunity cost of space was assessed. We suggest that key components of benefit were not included in the CIE assessment.

1.5 Problem 3: The CIE approach to measuring the opportunity cost of space ignored capital gain and ‘utility in use’

The CIE report correctly included the estimated cost of space needed to accommodate the revisions to the National Construction Code (NCC). Our concern is that the ‘value’ of this space to the occupants only captures the benefits of enhanced functionality. Importantly, the value of the space is the sum of both the enhanced functionality from improved accessibility (as estimated from the CIE WTP exercises), plus the capital value.

Furthermore, a wider hallway improves access for all occupants and visitors (particularly for visitors with a disability). Given that 20% of the Australian population have a disability, many if not most Australians have friends or family members with a disability. Note, this is utility from use as opposed to problem-reduction benefits (e.g. reduced falls) is already estimated. More broadly, the analysis assumes that current designs are exactly what people want and any change from this represents a net cost without any direct utility from use of the space, such as a study nook or laundry cupboard³.

In our suggested re-analysis we include a minimum combined estimate for capital gain and utility in use as being the retained capital value of the additional space (equal to the market price at the time of purchase). Set out below in Table ES4 are the benefit-cost ratios for each option with this adjustment applied, first as a univariate analysis, and then as a multivariate analysis in combination with the adjustment shown in Table ES3. Adding in a conservative estimate for improved capital gain/utility in use as a stand-alone change in parameter assumptions (univariate analysis), brings minor improvement across all ratios. Adding in both the Table ES3 analysis and the improved capital gain/utility in use brings significant improvement across all options. With both the ‘no overlap’ and

³ It could be argued that the WTP survey has taken this direct utility into account as it estimated the “WTP to avoid transfer of space from living areas and bedrooms to corridors, kitchen, laundry and bathrooms”. That is, the survey respondents should have provided a ‘net’ response after considering costs and benefits. We do not believe, however, that it is evident that they would have factored this in. Nonetheless we have adopted a very conservative approach to the estimation of incremental ‘utility in use’.

'25% overlap' assumptions, virtually all options show benefit-costs greater than 1. The Silver option returns benefits almost 3 times cost, while the Gold options now have sound economic credentials.

Table ES4: Benefit-cost ratios adjusted for improved capital value and utility in use in WTP approach in both univariate and multivariate analysis

Univariate analysis	Assumptions re. benefits from RIS Tables 7.2 & 7.3				
	Option 1 Silver	Option 2 Gold	Option 3 Gold +	Option 4	Option 5 Subsidy
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Add capital value of space to benefits	1.23	0.56	0.53	0.73	1.00
Multivariate analysis [benefits from tables 7.2 & 7.3] + [capital value of space]					
Base case benefits	1.23	0.56	0.53	0.73	1.00
Benefits overlap 75% + Cap value	1.64	0.74	0.67	0.83	1.16
Benefits overlap 50% + Cap value	2.05	0.92	0.81	0.93	1.32
Benefits overlap 25% + Cap value	2.46	1.10	0.95	1.03	1.48
No overlap of benefits + Cap value	2.87	1.28	1.09	1.13	1.64

Table Notes: Refer Section 3 for further detail. Where the benefits in dollar terms are greater than the costs in dollar terms, the benefit-cost ratio is >1. These results are shown with green highlight.

While the re-analysis presented so far provides a very different policy picture to that presented in the CIE report, no adjustment has been made to the discount rate. The CIE report itself raises this as an important matter for consideration and includes a sensitivity analysis with 3%, 5% and 10% alternate rates, rather than the 7% adopted by the CIE in their main analyses.

1.6 Problem 4: The discount rate used does not reflect current financial/economic thinking or practice

We argue that the choice of a 7 per cent discount rate in the base run analysis does not reflect current thinking and/or practice in the calculation of net present value (NPV). We note, for example, that the Council of Economic Advisors in the USA issued a brief in 2017 that advised as follows:

*"Current guidance from the office of management and budget requires using both a 7 percent and 3 percent real discount rate in regulatory benefit-cost analyses. **This issue brief reassesses the current choice of discount rates and methodologies for selecting the 3 percent and 7 percent rates.** Empirical evidence suggests that real interest rates around the world have come down since the last evaluation of the rates, and new theoretical advances considering future uncertainty likely suggest lower long term rates, as well. **In general the evidence supports lowering these discount rates,** with a plausible best guess based on the available information being that the lower discount rate should be at most 2 percent while the upper discount rate should also likely be reduced."* (Extract from Issue Brief Abstract, our emphasis)

A discount rate of 7 per cent, whilst in line with the central recommendation from the Australian Office of Best Practice Regulation in 2016, ignores their comment in their 2016 advice that:

"...the preferred approach is to base the discount rate on market-based interest rates, which indicate the value to the current population of future net benefits".

There are several economic theories that serve as rationales for the use of interest rates in economic and financial appraisal, including the Social Rate of Time Preference and the Social Opportunity Cost of Capital. In reality, irrespective of which theory is favoured, most economists and financial analysts acknowledge that the prevailing bond rate (i.e. rate of return on long term government debt) is the

best 'rule of thumb' for what the discount rate should be. In 2016, the 10 year bond rate in Australia averaged 2.33 per cent, compared with 0.88 per cent today. Unfortunately, 10 year bond rates are the longest term for which there is an historical series from the RBA. This would suggest that, as a maximum, a 5 per cent discount rate would be much more appropriate, although we would argue that even this rate is too high. There is now a 30 year bond rate in Australia, which is close to the economic life of a dwelling, and it is 1.86 per cent. We note, for example, that in the RIS prepared by the Department of Planning and Community Development in Victoria in 2010, entitled *Visitable and Adaptable Features in Housing*, a discount rate of 3 per cent was used. Further the discount rate widely used in the health sector is 3 per cent.

It is important to note that the choice of discount rate is not just an esoteric issue for economists and financial analysts - the choice has a huge impact on the benefit-cost ratios reported for the RIS. Given the time profiles adopted for the receipt of benefits and costs in the RIS, any reduction in discount rate will favour the benefit side more than the cost side, adding further weight to the economic credentials of implementing a compulsory regulation. We illustrate this in benefit-cost ratios, particularly in the multivariate analysis, in Table ES5. These results are further illustrated in Figure ES1, which shows that the majority of results of our re-analyses are above the threshold benefit-cost value of 1.00.

Indeed, in Table 11 (p.23), we demonstrate that there is a strong case to suggest that the benefit-cost ratio for Option 1 is greater than 2.0, or considerably higher than the base case estimate of 0.77, even when a discount rate of 7 per cent is applied. When a societal perspective is adopted from combining the value of reduced costs with WTP for altruism and reduced loneliness (Table 7.2, CIE report), to the WTP for increased accessibility, all options become attractive (>1.0), whether discounted at 3 per cent or not.

Table ES5 Benefit-cost ratios adjusted for lower discount rates

Univariate analysis	Discounted at 3% p.a. (approx.)				
	Option 1 Silver	Option 2 Gold	Option 3 Gold +	Option 4	Option 5 Subsidy
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Add capital value of space to benefits	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%	1.44	0.39	0.31	0.23	1.42
Benefits overlap 50%	1.94	0.61	0.48	0.35	1.61
Benefits overlap 25%	2.44	0.83	0.65	0.47	1.81
No overlap of benefits	2.94	1.05	0.83	0.60	2.00
Multivariate Analysis [benefits from tables 7.2 & 7.3] + [Capital value of space]					
Base case benefits	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%+Cap value	1.99	0.90	0.81	1.01	1.42
Benefits overlap 50%+Cap value	2.49	1.12	0.98	1.13	1.61
Benefits overlap 25%+Cap value	2.99	1.34	1.16	1.26	1.81
No overlap of benefits + Cap value	3.49	1.56	1.33	1.38	2.00

Table Notes: As the CIE economic model revealing the time profile of costs and benefits was not made available for review, the estimate of the impact of reducing the discount rate required assumptions that make these estimates an approximation only. Nevertheless, we demonstrate in Section 3 that our estimations are fit for purpose.

Putting the four key assumptions together, we conclude that the economic credentials for all options considered are considerably stronger than those presented in the CIE report and underpin the case for adding a regulation to the national building code.

1.7 Other Issues that have a smaller impact

There are a range of other issues of an economic nature that are also worth mentioning. Individually these issues will have a minor impact on the CIE results, but taken together they would further improve the economic credentials of the proposed regulation. These issues cover:

1.7.1: *Value of a statistical life:*

The results of an *in press* systematic review of Value of a statistical life (VSL) with the journal *Health Policy* (Carter is a co-author), suggest that the VSL used in the CIE report (\$4.5M) is too low and should be replaced with a value of \$7.0M [High: \$7.9M; Low: \$4.5M].

1.7.2: *Value of intangibles:*

There is no explicit dollar value placed on the potential for reduced 'pain and anxiety' in the CIE analysis, although it may have entered their analyses indirectly. When intangibles such 'pain and anxiety' are explicitly costed – such as in burden of disease or cost of illness studies - their magnitude can be quite large. Placing dollar values on such morbidity impacts is not straightforward or uncontested. We raise this issue of intangibles as a point for clarification and to list the range of issues that may not have entered the benefit cost arithmetic. In this context, the generic term 'pain and suffering' would also include increased dignity, an important outcome for those with accessible housing needs.

1.7.3: *Valuation of productivity impacts of premature retirement, premature death and morbidity:*

The approach to treatment of productivity impacts for the disabled in the CIE report only considers the direct link between better housing and potential productivity gains, where we agree insufficient evidence exists to enable quantification of impacts - although qualitative evidence certainly exists as indicated in the recent Melbourne Disability Institute survey.

While a direct link between improved housing and improved workforce participation/productivity may be difficult to assess, there are other productivity-related impacts that have been subject to extensive measurement in the health economics literature. These relate to the participation/productivity impacts of premature retirement, premature death, hospital visits, medical/allied practitioner visits, etc. for those in the paid workforce. Omission of these productivity impacts for those with housing accessibility needs in the paid workforce, would have a small impact on the benefit side of the CIE results. Their inclusion, however – given that methods are available – would send a clear message that these impacts are valued.

Further, there is also no provision in the CIE report for productivity impacts for those not in the paid workforce –household production effects - which would pick-up carers and other household-based impacts. Again, precedents for the calculation of these impacts in the health sector (e.g. risk reduction analyses) are available to guide their calculation.

1.7.4: *Several areas where incremental costing is not applied:*

For example, the approach taken to transition costs (CIE Report, p84), seems over-stated to us, in work environments where staying up-to-date with government codes and regulations would be a routine and ongoing aspect of work. A 'separable cost approach' – where only those costs saved by not implementing the regulation – would seem to be a more appropriate approach. Put another way, if

the approach adopted in the CIE report were applied to each and every regulation, then one suspects the costs would be recovered several times over. These costs could be subject to sensitivity analysis. Further, the report also relies on costs, today, of wider doors versus current standard doors. Once wider doors become the standard, the incremental costs will be minimal.

1.8 Summary and Conclusions

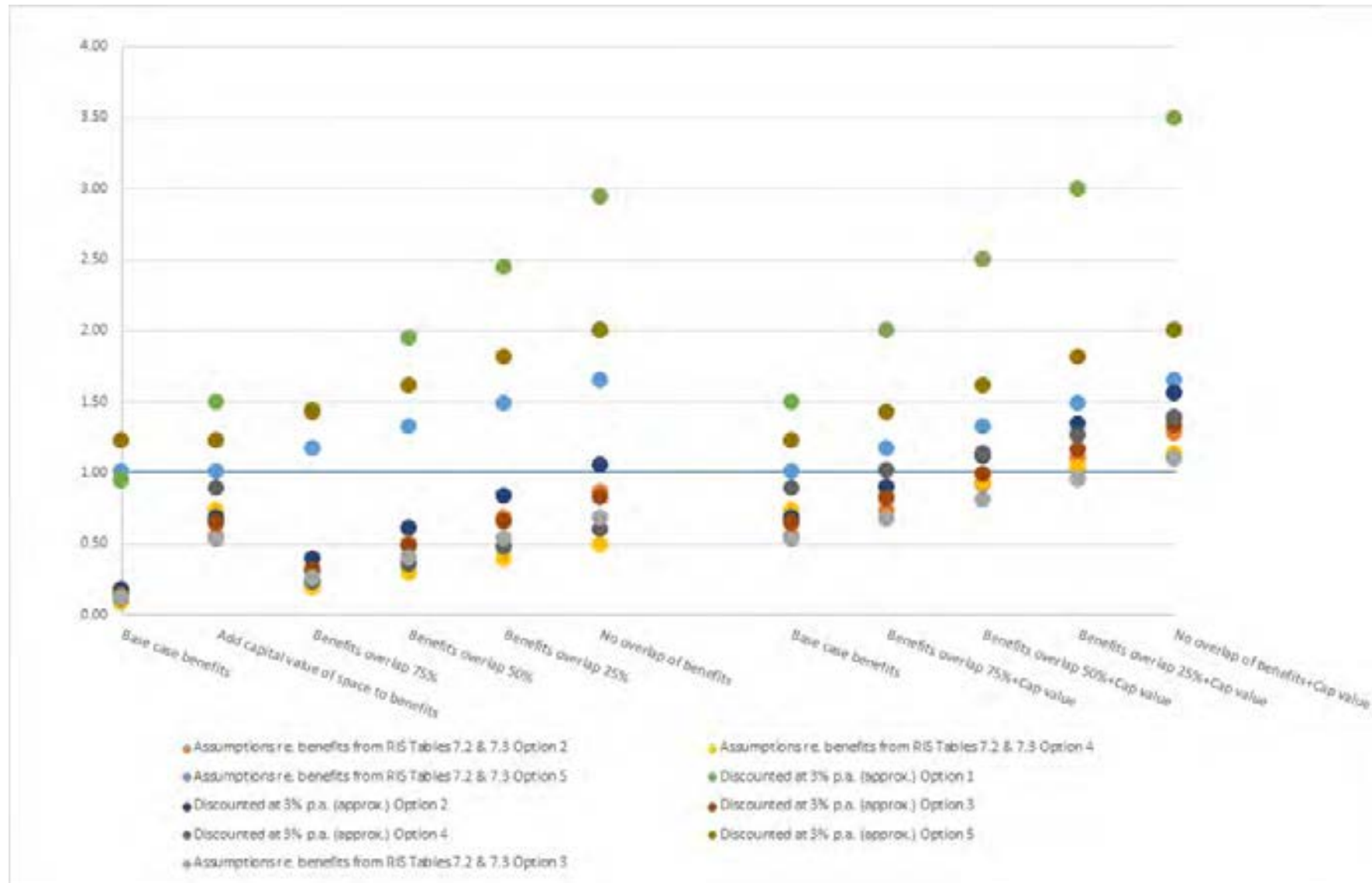
We conclude that the economic credentials for all options considered by the CIE are considerably stronger than those presented in their report. While the CIE favoured continuation of a voluntary code, we conclude that a social benefit code analysis based on our four key recommendations would underpin the case for adding a regulation to the national building code for all new Class 1a and Class 2 buildings. The additional methodological or social justice issues in Sections 2 and 3 of our report have less impact individually than those highlighted here, but the net effect of their application would be to further strengthen these conclusions. Our inability to access the model meant that it has not been possible to estimate the cumulative impact of these remaining issues.

We appreciate that the choice of which particular option to specify in a regulation will reflect factors in addition to these benefit cost ratios, including functionality for the elderly and those with disabilities, particularly for those in wheelchairs. Option 2 (Gold standard) has particular merit in this regard, as the most cost-effective of the options that achieve functionality for those in wheelchairs.

Further, we note that encouraging a match between the stock of accessible housing and those with accessible housing needs is central to the calculation of net benefit and therefore suggest that a combination of options could be highly desirable. In particular, combining Option 5 (a subsidy program to encourage availability of accessible rental properties) with Option 1 (Silver standard) and Option 2 (Gold standard) should be assessed. A consideration here is that many of those with accessible housing needs may have insufficient income to compete for accessible housing as it enters the marketplace. As noted above the benefits of the subsidy option exceed the costs, based on our revised analysis, but there will be overlapping benefits with Options 1 or 2 and these should not be double counted. Further analysis of this point should therefore be undertaken utilising the CIE model, to which we do not have access.

An additional option that might be considered for analysis, is a policy package that also included an enhanced matching service between suitable housing and those with housing needs. This will call into play the time profiles of cost and benefit inherent in the CIE report.

Figure ES1: Results for Dalton/Carter re-analyses illustrated graphically



2. Background and Introduction

2.1. Introduction

We were engaged by the Melbourne Disability Institute and the Summer Foundation in late July 2020 to assist them in responding to a Regulatory Impact Statement (RIS) Consultation document released by the Australian Building Codes Board (ABCB) at the request of the Australian Building Ministers Forum. More specifically, our task was to advise on the economic credentials of a possible regulation to include minimum accessibility standards in the National Building Code, particularly because the consultation documents included an extensive 280 page social benefit cost analysis conducted by the Centre for International Economics (CIE), an independent consultancy firm. While the inclusion of a social benefit cost analysis is a requirement of the RIS decision process in Australia, it is not always an easy document for those unfamiliar with economics to critically assess. Hence our role was to assist by critiquing the CIE study, particularly in relation to methodological or data choices that might impact the benefit cost results reported.

In our view the CIE has provided a comprehensive and helpful analysis of a complex set of issues. Their report is well structured and nicely crafted, particularly for those stakeholders familiar with economics. Importantly, it clearly flagged areas of uncertainty and issues for further discussion. While comprehensive model-based analysis was undertaken, we were unfortunately not able to obtain the model(s) they used and so had to approximate some of the calculations they undertook.

Given the tight timetable for responses to be prepared, we have focussed our report on issues with the potential to have a major impact on the economic credentials of the regulation under consideration, and simply noted other matters of method or valid alternative assumptions to those taken. The cost benefit results in Tables 7.2 to 7.4 (p110-112) of the CIE Report provide key summary information on the balance between benefits and costs for each option considered and are central to policy considerations. Two key sets of cost/benefit results are presented in the CIE Report; namely those based on: i) 'a problem reduction approach' targeted on those with housing accessibility needs; and ii) a broader societal approach based on 'willingness-to pay' analysis, which includes benefits to the general community from improved design and accessibility.

In our view, there are important methodological issues associated with these benefit-cost results that warrant further consideration. First, we cover four key issues that impact substantially on the results and their associated policy implications. We then briefly mention a range of other considerations that have smaller impacts, but which taken together would also impact the overall economic credentials of the proposed regulation. Of the four key issues, two relate to the principle of symmetry in the presentation of benefits and costs for a specified research question and context. One issue relates to the elements included the opportunity cost of space, while the last relates to the discount rate used in the net present value calculations.

It is also important to note that maximising 'societal welfare' with available resources is at the heart of the economics discipline, reflecting its origins as a part of philosophy. Defining what 'societal welfare' means raises the normative foundations of economics, but put simply, it involves what kind of society we want to live in. We were pleased, therefore, to see that the CIE Social Benefit Cost Analysis included a measure of societal benefit in both its 'problem reduction' and broader 'willingness-to-pay' approaches to net benefit. We consider this issue further in this section of our report. We conclude that to the extent the CIE estimate under-estimates the true societal benefit, it further under-estimates the economic credentials of the regulation.

2.2 Background: a brief economic perspective on government intervention

Putting the fundamental role of defence, law and order to one side, governments intervene in the marketplace for two basic reasons – to pursue social justice policies and/or to correct market failure. Both rationales are applicable for this RIS on minimum access standards. It is important to note that both rationales involve economic reasoning and concepts of efficiency. Social justice considerations go to the heart of what constitutes ‘societal welfare’ – that is, what kind of society do we want to achieve with our available resources – while the marketplace provides an important mechanism by which this can be achieved. The first provides what might be called ‘big E’ efficiency (maximising the social welfare function), while the second provides what might be called ‘small E’ efficiency (allocative and technical efficiency). Both are important and interact in ways that help define the role and contribution of government.

The principle of solidarity – looking after those less able to care for themselves - is highly valued in many societies. It is reflected in social welfare policy and the importance given to the notion of equity and ethical outcomes. The achievement of well informed and competitive markets is also important. Fundamental decisions related to: i) what to produce (allocative efficiency); ii) how to produce it (technical efficiency); and iii) who receives the goods and services produced (distributive justice) are all answered by a well-functioning market, with consumption based on willingness-to-pay principles. A market failure rationale for government intervention tends to involve marketplace roles i) and ii), while a social justice rationale tends to involve role iii), replacing ‘willingness-to-pay’ as the basis for distribution with needs-based approaches from an individual perspective (e.g. ability-to-pay) or societal perspective (e.g. merit goods such as education and health).

Market failure can occur for many reasons, particularly in health, but common reasons include externalities (positive or negative), compromised consumer sovereignty where the consumer is not the best judge of their own welfare (e.g. ‘agency’ relationship in health care and supplier-induced demand), asymmetry of information and undue market power that compromises workable competition. Market failure, however, in and of itself is not sufficient reason for government action, as intervention may be ineffective and/or lead to adverse effects worse than the original failure. One consideration is whether the type of government intervention (i.e. provide funding, provide goods/services, provide information, regulate the market, invoke tax/subsidy) matches the source of the market failure. Each type of intervention has its own role and pros/cons that is beyond the scope of this brief background note. The need to assist government where they were the major decision-maker (e.g. defence) and the need to avoid ‘government failure’, led to the development of the decision sciences, including social cost benefit analysis.

2.3 What is the role of Social Cost Benefit Analysis (CBA) – what should it cover?

2.3.1 *Government commitments to social justice in housing*

There are various international treaties/conventions and domestic policies that need to be considered as part of the RIS decision-making process, including the extent to which they are covered by the CIE Social Benefit Cost Analysis. The audit table in Appendix 1 of this paper lists human rights frameworks related to housing for persons with disabilities and older peoples. Included are: i) the Universal Declaration of Human Rights (UDHR); ii) the International Covenant on Economic, Social and Cultural

Rights (ICESCR); iii) the UN Convention on Rights of Persons with Disabilities (CRPD), 2007; iv) the Principles for Older Persons (POP); v) the Australian Action Plan on Human Rights (NAP); vi) the COAG-endorsed National Disability Strategy, 2011 (NDS); vii) the Disability Discrimination Act, 1992 (DDA); and viii) the National Disability Insurance Scheme (NDIS))

It is also noteworthy that the Victorian Government issued a RIS on VISIBLE and ADAPTABLE Housing, in 2010. The Victorian government has a policy commitment to ensuring that people with a disability or limited mobility will not be excluded from participating in social life and work based on principles of equity and fairness. Their policy also recognises that the whole community benefits socially and economically when all its members are able to participate and to contribute. Other relevant recognition of the need for social justice in housing include: i) the Productivity Commission report on disability care and support in 2011; and ii) government action to address the societal and economic consequences of the COVID 19 pandemic.

There is also the important COAG recognition that the viability of the NDIS was contingent on complementary mainstream policy, services and amenity, including inclusive and accessible built environments. Complementing this, we also know that in the Australian community there is a strong preference for older people to live in their own home, playing a vital role in supporting family life and enriching community life.

2.3.2 The CIE calculation of 'societal benefit'

It is important to acknowledge in this aspect of our review, that the CIE report included a separate WTP survey to assess 'societal benefit' – defined as household willingness to pay to improve housing accessibility for other people – in both their problem reduction and broader WTP assessments. This was an innovative and important step to take and we commend them for it. That said, it is now a matter for consideration as to whether assessing household WTP captures the government's commitment to social justice, evident in all the activities listed above. It is a well-known characteristic in the decision-making literature that individuals will make very different decisions depending on whether they are taking decisions to maximise their own welfare (including a caring utility or altruism-based decision), taking decisions wearing a 'veil of secrecy' where they know the range of impacts but not how they personally will be impacted, or whether they are taking decisions from an explicit government or community-wide perspective. Libertarian and egalitarian ideologies on government would take different positions on this, but both would agree that it is only in the world of perfect competition – which rarely if ever exists - that summing individual welfare maximised through the marketplace, is a legitimate approach to maximising community welfare. To use economic terminology, there are arguments in the social welfare function other than individual utility; these include equity, solidarity, consumption of merit goods like education and health, law and order, etc. Most would recognise that there is an obligation on national governments to create the kind of society their citizens want through the implementation of their electoral mandate. While this is rather an esoteric presentation, it goes to the heart of the interplay between achieving social justice (big 'E' efficiency) and avoiding government failure (small 'e' efficiency). It brings us back to the central point of whether the CIE Social Benefit Cost Analysis gives explicit recognition to government policy on accessible housing, and if, does it capture the benefit adequately?

Having considered this broader interplay between notions of efficiency, it is our view that the full extent of these broader social justice considerations would not have been captured in the CIE willingness-to-pay survey that assessed the altruism benefit. The extent of any shortfall here, which is reflected in the qualitative survey undertaken by the Melbourne Disability Institute, should therefore be considered as increasing the economic credentials of the proposed regulation.

3 The CIE Social Benefit Cost Analysis

3.1 The principle of symmetry in the reporting of costs and benefits

An important principle in the conduct of economic analysis is symmetry in the identification, measurement and valuation of benefits and costs, in order to avoid biased results. There are guidelines for each of these three steps, which guide inclusion/exclusion, measurement practice and valuation procedures⁴. In social benefit cost analysis, analysts are strongly encouraged to identify all relevant costs and outcomes and to be transparent in their inclusion/exclusion decisions and associated measurement/valuation steps. CIE have followed this practice admirably, but there are important issues for discussion in the choices made.

The first relates to the way in which costs and benefits are assembled in the reported cost/benefit results. Complexity in real world analysis means that: i) costs sometimes overlap across multiple projects (e.g. overheads, common reception area, capital used across multiple projects, etc.); ii) that benefits can flow to multiple population groups from the same capital asset (e.g. mammographic equipment used for both screening and diagnostic roles, our road system used by heavy trucks as well as passenger vehicles, homes with excellent accessibility features sought by multiple potential buyers, etc.); and iii) that choices exist as to how these joint or common elements are attributed and reported in cost benefit results. More specifically, if the benefit side of a benefit cost analysis is restricted to a subset of all those who receive a benefit, then the cost side needs to be apportioned accordingly between the beneficiaries so as to avoid bias in reporting the balance between benefits and costs. Note the notion of efficiency is fundamentally about the relationship between benefits and resource use (costs), with resource use being the metric for assessing benefit gained/ benefit lost from resource use decisions.

The existence of joint effects – both on the benefit and cost side - gives rise to important methodological issues associated with developing and applying *apportionment criteria* for assessing costs and benefits. Particularly important is that apportionment criteria are clearly specified, both in regard to the criterion adopted and the basis for selection. The latter could vary from simplicity of calculation (e.g. percentage of floor space utilised), to the pursuit of policy goals that reflect efficiency, equity or cost recovery objectives. These can be based on a ‘benefits received’, a ‘costs inflicted’ or an ‘ability-to-pay’ criterion. The willingness-to-pay survey work provided by the CIE enables a ‘benefits received’ approach to be adopted here. Relevant considerations include the study perspective and rationale for conducting the analysis. It is not unusual for multiple formulations to be considered, reflecting nested study perspectives and the range of stakeholders impacted.

Next, we consider the two issues that arise in the CIE report in relation to the symmetry principle. In the CIE report the ‘problem reduction approach’ is preferred so we will start with those cost/benefit results.

⁴ Well known guidelines in the health sector include: i) Drummond et. al. *Methods for the Economic Evaluation of Health Care Programmes*, 3rd Edition, Oxford University Press, 2005; ii) Gold et. al. *Cost-effectiveness in Health and Medicine*, Oxford University Press, New York, 1996 [Washington Panel]; iii) Drummond et.al. *Guidelines for authors and peer reviewers of economic submissions to the BMJ*, British Medical Journal, 8 (4), 671-682 [CHEERS Statement]; iv) Sugden & Williams *The Principles and Practice of Practical Cost-Benefit Analysis*, Oxford University Press, 1978. There are many other useful texts that could be listed.

3.2 Problem 1: The CIE ‘problem reduction approach’ over-counts the cost side:

In the ‘problem reduction approach’ all costs for each of the five options are included, but only those benefits that result from improved access for those with housing accessibility needs. These benefits include a comprehensive set of cost offsets (such as injury from falls, time in hospital/transition care, etc.), as well as an altruistic benefit to society for improved equity/social justice outcomes. At first glance this seems like a balanced analysis from a targeted problem-reduction viewpoint; but then the principle of symmetry suggests this may not be the case. As the CIE report makes very clear, there are significant benefits from improved functionality and design for the general community that are not included from this perspective (shown in Table 7.3 of the CIE Report). In our view, it is problematic to count all the costs of implementing each option, but only a component of the associated benefits, ignoring those benefits that flow directly from the intervention to the general community⁵.

So if the boundary around benefits included is confined to those that flow from assisting a target sub-group, then the cost side needs to be apportioned accordingly between this target sub-group and the general population. If we take a ‘benefits received’ approach to the apportionment of costs (with benefits as valued by the CIE report WTP tables), then costs should be reduced by a factor of 60%! This factor alone takes the net benefit/cost result of option 3 from -\$24,015M to -\$6,572M. Set out below in Table ES1 are the benefit cost ratios for each option with this adjustment applied. Options 1 and 5 are now showing a ratio >1 (i.e. benefits > costs), while options 2, 3 and 4 remain with a ratio <1 (i.e. benefit < cost).

Table 6: Benefit-cost ratios adjusted to achieve symmetry in the ‘problem reduction’ approach

Dalton/Carter re-analysis of benefit-cost ratios	Option 1	Option 2	Option 3	Option 4	Option 5
Problem-Reduction Base case benefit-cost ratios in CIE report in RIS	0.77	0.14	0.11	0.09	1.00
Cost apportionment reduced by 60%	1.29	0.23	0.19	0.14	1.67

Table Note: Results where benefits are higher than costs are shown in green highlight.

Next we go to the more complete representation of benefit in the “willingness-to-pay” approach, where a reciprocal problem exists. Rather than costs being over-attributed to the target group, benefits are being under-counted. We understand the CIE preference for the ‘problem-reduction approach’, but see this as a consequence of the way in which they have defined benefits, rather than any inherent limitation of a broader approach to measuring social benefit-cost. In our view, the adoption of the ‘problem reduction approach’ as the primary outcome would present only a partial picture of the benefit cost impacts of the proposed regulation. The remaining re-analyses we present, therefore are all based on the broader WTP approach.

3.2 Problem 2: The CIE ‘willingness to pay’ approach under-counts the benefit side

In a social cost benefit analysis the normal expectation is that all costs and benefits will be included, irrespective of to whomsoever they accrue. This is the point of adopting a social perspective as opposed to narrower perspectives – such as ‘health sector’, ‘government as 3rd party funder’, ‘client and caregiver’, ‘provider, etc. Accordingly, we favour the broader approach that includes all the benefits flowing from the proposed regulation, as well as all the costs. The need to include all benefits,

⁵ Only the benefit to society attached to an improvement in equitable access to housing is included. Other benefits to the general community valued in the WTP survey are excluded from these benefit-cost results.

as well as all costs, gives rise to our second concern that not all relevant benefits are included in the CIE WTP approach.

In reference to their two approaches, the CIE report explains that:

“The key difference between this approach and the problem-reduction approach is that this approach includes, for Options 1-4, benefits to households that do not currently contain any persons with limited mobility” (p.114, CIE Report).

Whereas the benefits listed in Table 7.2 of the CIE Report focus on cost-offsets⁶ (resource savings), particularly to government, the benefits in Table 7.3 of the CIE report focus on the benefits of enhanced accessibility. The identical value attached to altruism for each option is the only item that is clearly duplicated in both Tables 7.2 & 7.3. The remaining items are shown below in Table 7. From our interpretation of each benefit it appears evident that the two tables cover different aspects of societal benefit that in indeed complementary. The one exception may be home modification costs which is a resource saving that is mentioned in both lists. To accommodate this possibility, we include percentage overlap results to cater for any overlap in this item. To the extent that there is no overlap between in the ‘benefits’ listed in Table 7, they are all fully additive. **That is, a societal perspective should include consideration of both the potential resource savings plus the value of the improved accessibility.**

Table 7: Comparison of reported benefits in Table 7.2 (problem reduction approach) and Table 7.3 (broader WTP approach) of the CIE report

Table 7.2 (CIE Report)		Table 7.3 (CIE Report)	
CBA Benefit - Problem Reduction Approach	Interpretation	CBA Benefit – Broader WTP Approach	Interpretation
Reduced falls	<i>The value of resource savings</i>	Getting in and out	<i>Value of aspects of accessibility</i>
Reduced time in hospital/transition care	<i>The value of resource savings</i>	Moving around indoors	<i>Value of aspects of accessibility</i>
Reduced costs associated with loneliness	<i>The value of resource savings</i>	Living with mobility on same level as an entrance	<i>Value of aspects of accessibility</i>
Reduced home modification costs	<i>The value of resource savings</i>	Minimal modification required for ageing in place	<i>The value of resource savings</i>
Reduced carer related costs	<i>The value of resource savings</i>		
Reduced incidence of moving	<i>The value of resource savings</i>		
Reduced premature/inappropriate entry to aged care	<i>The value of resource savings</i>		

Table Notes: Tables 7.2 and 7.3 are taken from page 112 and p113 respectively, of the CIE Report

Set out below in Table 8 are the benefit cost ratios for each option with altruism counted once and different assumptions about the degree of overlap applied as described above. Options 1 and 5 are

⁶ These cost-offsets include reduced falls, reduced time in hospital/transition care, reduced costs associated with loneliness, reduced home modification costs, reduced care-related costs, reduced incidence of moving, and reduced/inappropriate entry into aged care.

now showing significantly improved ratios >1 , while options 2, 3 and 4 show improvement but remain with a ratio <1 (i.e. benefit $<$ cost). Option 2 however (Gold standard) is now much closer to benefits equalling costs at 0.86.

Table 8: Benefit-cost ratios adjusted to achieve symmetry in the ‘willingness-to-pay’ approach

Dalton/Carter re-analysis of benefit-cost ratios	Assumptions re. benefits from RIS Tables 7.2 & 7.3				
	Option 1	Option 2	Option 3	Option 4	Option 5
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Benefits overlap 75%	1.18	0.32	0.26	0.19	1.16
Benefits overlap 50%	1.59	0.50	0.40	0.29	1.32
Benefits overlap 25%	2.00	0.68	0.54	0.39	1.48
No overlap of benefits	2.41	0.86	0.68	0.49	1.64

Table Note: Results where benefits are higher than costs are shown in green highlight.

3.3 Problem 3: The CIE approach to assessing the opportunity cost of space ignore capital gain and utility in use that reduce the net-cost substantially

Moving from the symmetry principle, we now consider the way in which the opportunity cost of space was assessed. It appears that components of benefit were not included in the CIE assessment, viz: i) the re-sale value of the ‘capital gain’ from the CIE estimate of the additional space; and ii) adequate recognition that in addition to their cost, accessibility features have a ‘utility in use’ - separate from the consequential problem-reduction benefits.

The CIE report includes the estimated cost of space needed to accommodate the revisions to the NCC. The methods used to estimate the cost of this additional space appear reasonable and are applied in their report to Options 1-4. To estimate the ‘value’ of this space to the occupier, the CIE reported the results of two conjoint analysis exercises for:

1. The WTP to avoid the transfer of space from living areas and bedrooms to corridors, kitchen, laundry and bathrooms, and
2. The WTP for better outcomes for others (altruism).

Our concern is that the ‘value’ of this space to the occupants only captures the benefits of enhanced functionality. Importantly, the value of the space is the sum of both the enhanced functionality from improved accessibility (as estimated from the WTP exercises), plus the capital value of the extra space. That is, whilst the opportunity cost is correctly represented by the market value of the additional space, the *minimum* value of that space to the purchaser must be equal to its re-sale value, even if the utility value of accessibility from that additional space is assumed to equal zero.

Furthermore, a wider hallway improves access for all occupants and visitors (particularly for visitors with a disability). Note, this is utility from use as opposed to problem-reduction benefits (e.g. reduced falls) already estimated. More broadly, the analysis assumes that current designs are exactly what

people want and any change from this represents a net cost without any direct utility from use of the space such as a study nook or laundry cupboard⁷.

In our suggested re-analysis of these omitted benefits in the CIE report, we include a minimum or floor estimate of the overall benefit as being the retained capital value of the additional space (equal to the market price at the time of purchase). Set out below in Table 9 are the benefit-cost ratios for each option with this adjustment applied, first as a univariate analysis, and then as a multivariate analysis in combination with the adjustment shown in Table 8. Adding a conservative estimate for improved capital value alone brings minor improvement across all ratios. Adding in both the Table 8 analysis and the improved capital value, brings significant improvement across all options. With both the 'no overlap' and '25% overlap' assumptions, virtually all options show benefit-costs greater than 1.

Table 9: Benefit-cost ratios adjusted for improved capital value in WTP approach in both univariate and multivariate analyses

Univariate analysis	Assumptions [benefits from RIS Tables 7.2 & 7.3]				
	Option 1	Option 2	Option 3	Option 4	Option 5
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Add capital value of space to benefits	1.23	0.56	0.53	0.73	1.00
Multivariate analysis [benefits from tables 7.2 & 7.3] + [capital value of space]					
Base case benefits	1.23	0.56	0.53	0.73	1.00
Benefits overlap 75% + Cap value	1.64	0.74	0.67	0.83	1.16
Benefits overlap 50% + Cap value	2.05	0.92	0.81	0.93	1.32
Benefits overlap 25% + Cap value	2.46	1.10	0.95	1.03	1.48
No overlap of benefits + Cap value	2.87	1.28	1.09	1.13	1.64

Table Note: Results where benefits are higher than cost are highlighted in green.

3.4 Problem 4: The discount rate used does not reflect current financial/economic thinking or practice

We argue that the choice of a 7 per cent discount rate in the base case analysis does not reflect current thinking and/or practice in the domestic or international settings. We note that the Council of Economic Advisors in the USA issued a brief in 2017, for example, that advised as follows:

*“Current guidance from the office of management and budget requires using both a 7 percent and 3 percent real discount rate in regulatory benefit-cost analyses. **This issue brief reassesses the current choice of discount rates and methodologies for selecting the 3 percent and 7 percent rates.** Empirical evidence suggests that real interest rates around the world have come down since the last evaluation of the rates, and new theoretical advances considering future uncertainty likely suggest lower long term rates, as well. **In general the evidence supports lowering these discount rates,** with a plausible best guess based on the available information being that the lower discount rate should be at most 2 percent while the upper discount rate should also likely be reduced.”* (Extract from Issue Brief Abstract, our emphasis)

⁷ It could be argued that the WTP survey should have taken this direct utility into account as it estimated the “WTP to avoid transfer of space from living areas and bedrooms to corridors, kitchen, laundry and bathrooms”. That is, the survey respondents should have provided a ‘net’ response after considering costs and benefits. We don’t believe, however, that it is evident that they would have factored this in. Nonetheless we have adopted a very conservative approach to the estimation of utility in use.

While we acknowledge that a discount rate of 7 per cent is in line with the central recommendation from the Australian Office of Best Practice Regulation, it also ignores their own comment in that same 2016 advice, viz:

"...the preferred approach is to base the discount rate on market-based interest rates, which indicate the value to the current population of future net benefits". (Extract from the Australian Office of Best Practice Regulation, 2016 Advice paper)

There are several economic theories that serve as rationales for the use of interest rates in economic and financial appraisal, including the Social Rate of Time Preference and the Social Opportunity Cost of Capital. In reality, irrespective of which theory is favoured, most economists and financial analysts acknowledge that the prevailing bond rate is the best 'rule of thumb' for what the discount rate should be. In 2016, the 10 year bond rate in Australia averaged 2.33 per cent, compared with 0.88 per cent today. Unfortunately, 10 year bond rates are the longest term for which there is an historical series from the RBA. This would suggest that, as a maximum, a 5 per cent discount rate would be much more appropriate, although we would argue that even this rate is too high. We note, for example, that in the RIS prepared by the Department of Planning and Community Development in Victoria in 2010, entitled *Visitable and Adaptable Features in Housing*, a discount rate of 3 per cent was used. Further the discount rate widely used in the health sector is 3 per cent.

It is important to note that the choice of discount rate is not just an esoteric issue for economists and financial analysts - the choice has a huge impact on the benefit-cost ratios reported for the RIS. Given the time profiles adopted for the receipt of benefits and costs in the RIS, any reduction in discount rate will favour the benefit side more than the cost side, adding further weight to the economic credentials of implementing a compulsory regulation. We illustrate this in Table 10 and Table 11 where the key factors for the WTP approach are brought together, namely:

1. providing a complete societal perspective of benefits;
2. estimation of the net-opportunity cost of space; and
3. a more realistic discount rate of 3%

Where the estimated CBA shows a net benefit the cell has been highlighted in green. These results are further illustrated in Figure 1, which shows that many of results of our re-analyses are above the threshold benefit-cost value of 1.00, partitioned in the figure by those results subject to 7 per cent discounting and those subject to 3 per cent discounting.

Indeed there is a strong case to suggest that the benefit-cost ratio for Option 1 (Silver) is greater than 2.0, considerably higher than the base case estimate of 0.77, even when a discount rate of 7 per cent is applied. Similarly, the economic case for Option 2 (Gold) is backed by benefit-cost ratios > 1, even with a 7 per cent discount rate, for both the no overlap and 25 per cent overlap formulations.

Table 10: Benefit-cost ratios adjusted for lower discount rates

Univariate analysis	Discounted at 3% p.a. (approx.)				
	Option 1	Option 2	Option 3	Option 4	Option 5
WTP Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89
Add capital value of space to benefits	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%	1.44	0.39	0.31	0.23	1.42
Benefits overlap 50%	1.94	0.61	0.48	0.35	1.61
Benefits overlap 25%	2.44	0.83	0.65	0.47	1.81
No overlap of benefits	2.94	1.05	0.83	0.60	2.00
Multivariate Analysis [benefits from tables 7.2 & 7.3] + [Capital value of space]					
Base case benefits	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%+Cap value	1.99	0.90	0.81	1.01	1.42
Benefits overlap 50%+Cap value	2.49	1.12	0.98	1.13	1.61
Benefits overlap 25%+Cap value	2.99	1.34	1.16	1.26	1.81
No overlap of benefits + Cap value	3.49	1.56	1.33	1.38	2.00

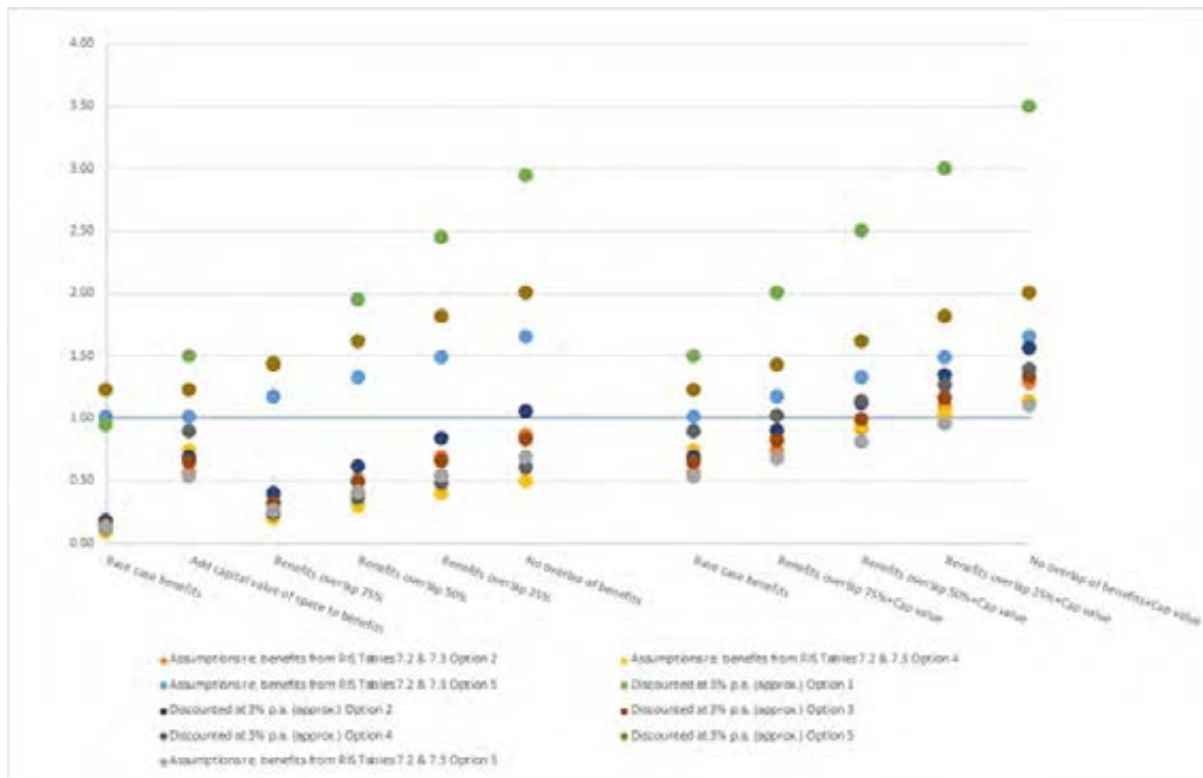
Table Notes: As the RIS economic model was not made available for review, the estimate of the impact of reducing the discount rate required assumptions that make these estimates an approximation only. Refer methods outlined below.

Table 11 Summary of benefit-cost ratio results for Dalton/Carter re-analyses

Univariate analysis	Assumptions from CIE Report Tables 7.2 & 7.3 (with 7% discount rate)					Discounted at 3% p.a.				
	Option 1	Option 2	Option 3	Option 4	Option 5	Option 1	Option 2	Option 3	Option 4	Option 5
Base case benefit-cost ratios in CIE report	0.85	0.30	0.24	0.17	0.89	1.27	0.23	0.19	0.16	1.14
Add capital value of space to benefits	1.23	0.56	0.53	0.73	1.00	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%	1.18	0.32	0.26	0.19	1.16	1.44	0.39	0.31	0.23	1.42
Benefits overlap 50%	1.59	0.50	0.40	0.29	1.32	1.94	0.61	0.48	0.35	1.61
Benefits overlap 25%	2.00	0.68	0.54	0.39	1.48	2.44	0.83	0.65	0.47	1.81
No overlap of benefits	2.41	0.86	0.68	0.49	1.64	2.94	1.05	0.83	0.60	2.00
Multivariate Add [Benefits from 7.2 & 7.3] + [Capital value of space]										
Base case benefits	1.23	0.56	0.53	0.73	1.00	1.50	0.68	0.64	0.89	1.22
Benefits overlap 75%+Cap value	1.64	0.74	0.67	0.83	1.16	1.99	0.90	0.81	1.01	1.42
Benefits overlap 50%+Cap value	2.05	0.92	0.81	0.93	1.32	2.49	1.12	0.98	1.13	1.61
Benefits overlap 25%+Cap value	2.46	1.10	0.95	1.03	1.48	2.99	1.34	1.16	1.26	1.81
No overlap of benefits + Cap value	2.87	1.28	1.09	1.13	1.64	3.49	1.56	1.33	1.38	2.00

Table Notes: Where CBA>1.00; rounding errors may apply. Application of a 3% discount rate is an approximation as the CIE model was not available.

Figure 2: Results for re-analyses



3.4.1 Methods adopted for the re-analysis for a 3% discount rate

The CIE report provides a sensitivity analysis that tests their results at discount rates of 10%, 5% and 3% (refer p.118, Table 7.7 of the CIE Report). As the economic model developed for the CIE report was not made available, it was not possible for us to accurately test the impact of alternative discount rates, particularly when combined with changes to other parameters. This is because the discounted results will vary with the model's predicted distribution of benefits over time. For instance, a discounted left skewed distribution will produce a different and more favourable result to that of a right skewed distribution, where more of the benefits are subject to the effect of discounting over time (**Figure 3: Possible distributions of benefits** Figure 3). In the absence of knowing the distribution produced by the model, it was necessary to assume a constant or linear distribution (Figure 3).

Figure 3: Possible distributions of benefits



Our methods were derived from the standard formula used to estimate present value:

$$PV = C \times \left[\frac{1 - (1 + r)^{-n}}{r} \right]$$

Where

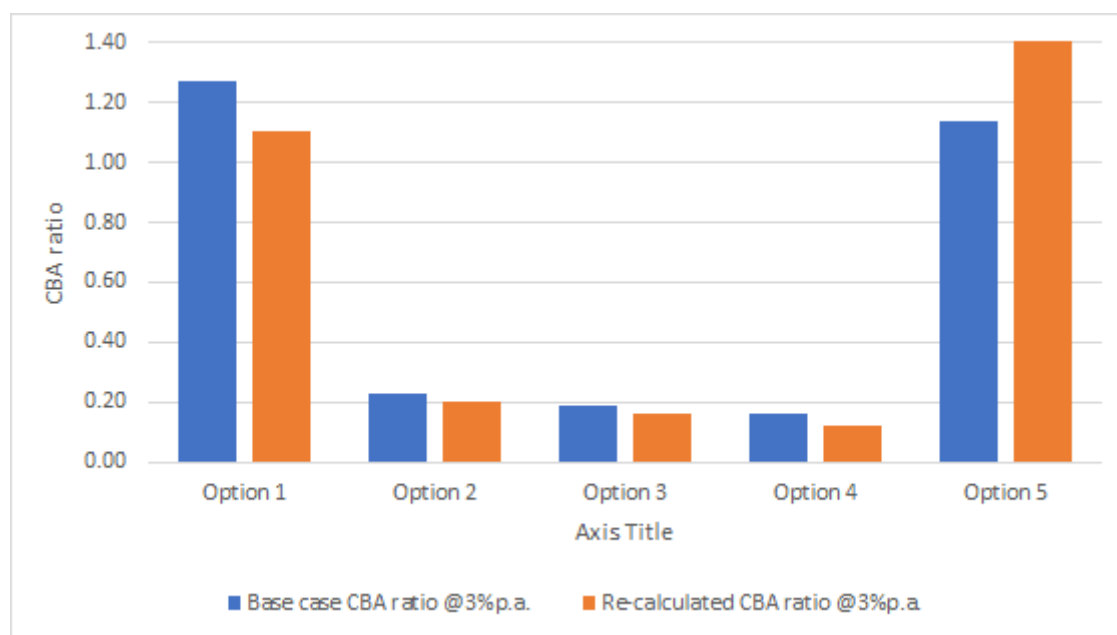
- C = the benefit (\$cash) per period
- PV = present value
- r = discount rate
- n = number of years

To approximate the results of a 3% discount rate upon our re-analyses, we used the following calculations to first determine the present value of benefits and costs per period:

- Using the results reported in Tables 7.2 and 7.3 of the CIE report, the above equation was solved for the present value of payments (PV) using the assumption that the benefit per period (C) was constant. This was performed for each of the Options 1-5, and was performed over a period of 40 years (n) for benefits and 10 years for costs as per the CIE report description of the treatment of benefits and costs in the model.
- The results provided estimates of the undiscounted benefits per period, for each of the 40 years. The calculations were similarly used for costs, but which only accrued for 10 years.
- These results were used to estimate the combined value of benefits from Table 7.3 and Table 7.2 under the different assumptions concerning the degree of overlap of benefits.

To determine the reliability of these methods, our results from our re-construction of the CIE base case model after applying a 3% discount rate were compared to the results reported in the CIE report sensitivity analysis for their 3% sensitivity analysis. This comparison is shown in Figure 4. The comparison suggest that the CIE model may produce a left skewed distribution of benefits as the CBA ratio is less for our reconstruction, however it also suggests that our results are conservative (i.e. the CBA results are likely to be slightly more attractive than what we have estimated). The opposite observation though applies to Option 5 where our results may be more optimistic.

Figure 4: Re-analysis discount rates; comparison of CIE base case and re-calculated results



The 3% discount rate results reported for our re-analyses are therefore an approximation, but we believe they provide sufficient precision to demonstrate the order of results that would apply and contribute to policy and regulatory development.

3.5 Other issues

There are a range of other issues that we have not had a chance to incorporate into our assessment, given the limited time available to us and lack of access to the CIE models. We list these issues below as points for clarification and to flag the range of the various implications of the proposed regulation that may not have entered the benefit-cost model. They could be considered, along with the broader social justice considerations raised in Section 2 and other qualitative evidence, as part of a broader social planning balance sheet.

3.5.1: Value of a statistical life:

In estimating the potential offset for premature deaths averted, the CIE utilise the common methodology of applying the value of a statistical life (VSL). One of the doctorate students with Deakin Health Economics has a publication in press on the "Systematic review to establish the value of a statistical life for Australia" with *Health Policy*. The results of this systematic review suggest that the VSL used in the CIE (\$4.5M) report is too low and should be replaced with a value of \$7.0M [High: \$7.9M; Low: \$4.5M].

3.5.2: Value of intangibles:

There is no explicit dollar value placed on the potential for reduced 'pain and anxiety' in the CIE analysis, although it may have entered their analyses indirectly. Certainly their problem-reduction approach considered a comprehensive range of issues from a cost offset perspective, but did not seem to cover any associated direct health status impacts for 'pain and anxiety'. Alternatively, 'pain and anxiety' may have entered the conjoint analyses in the WTP approach, but again the scenarios presented and the questions asked don't make this clear. When intangibles such 'pain and anxiety'

are explicitly costed – such as in burden of disease or cost of illness studies - their magnitude can be quite large. Placing dollar values on such morbidity impacts is not straightforward or uncontested. In economic evaluations conducted in the health sector, for example, such health status considerations are often measured through quality of life measurement using a technique called cost-utility analysis (CUA), with results presented as a ‘cost per quality adjusted life year (QALY)’. Sometimes analysts convert QALYs to dollar values by applying the decision threshold on what constitutes value-for-money in CUA (such as \$50,000 per QALY gained). We raise this issue of intangibles as a point for clarification and to list the range of issues that may not have entered the benefit cost arithmetic.

3.5.3: Valuation of productivity impacts of premature retirement, premature death and morbidity:

The approach to treatment of productivity impacts for the disabled in the CIE report only considers the direct link between better housing and potential productivity gains, where we agree that little evidence exists. It is a similar issue in many ways to trying to value “presenteeism”, where employees are at work but unproductive for a range of possible reasons. While a direct link between improved housing and improved workforce participation/productivity may be difficult to assess, there are other productivity related impacts that have been subject to extensive measurement in the health economics literature. These relate to the participation/productivity impacts of premature retirement, premature death, hospital visits, medical/allied practitioner visits, etc. for those in the paid workforce. There is also no provision for those not in the paid workforce, which would pick-up carers and other household-based impacts (Household Production Effects).

3.5.4: Several areas where incremental costing is not applied:

The approach taken to transition costs (CIE Report, p84), seems over-stated to us, in work environments where staying up-to-date with government codes and regulations would be a routine and ongoing aspect of work. A ‘separable cost approach’ – where only those costs saved by not implementing the regulation – would seem to be a more appropriate approach. Put another way, if the approach adopted in the CIE report were applied to each and every regulation, then one suspects the costs would be recovered several times over. These costs could be subject to sensitivity analysis.

3.5.5 Other comments:

- Safety costs show a very wide range of estimates (refer CIE Report Table 2.20) for hospital, ED and non-hospital treatment but do not appear to be tested in the sensitivity analysis. It would be appropriate to do this using the CIE model given the uncertainty range.
- Benefits in the CIE model continue beyond year 10 for a further 40 years. CIE do not specify the algorithms for doing this and so it is not clear if (and how) they include their estimate of the additional 4-5% of people who acquire a disability **each year**, that is, the population of beneficiaries over the 30-year extension of benefits is not constant.

4 Conclusions

The Consultation RIS prepared by CIE occurs in a complex environment. The regulatory proposal evaluated by CIE is intended to increase the supply of housing that meets the needs of the community, including older Australians and others with a mobility-related disability. The complexity arises from both the diversity of the population with mobility-related disability, and from the variety of programs currently in place that partially meet the needs of people with mobility-related disability. These programs variously subsidise, directly provide or encourage private provision of such housing.

The CIE have made an admirable effort in developing a CBA of the proposed regulatory changes. Given the size and complexity of the task, they are to be commended. Their work provides a sound platform from which to progress and our comments in this report are intended to provide constructive feedback. We nevertheless believe that scope remains for important improvement to more accurately reflect the economic credentials of the proposed regulation. The re-analyses included in this report show that allowance for any one of these improvements would have a significant impact on results. The effect is commensurately greater if their cumulative effect is analysed.

The re-analyses are based upon our four main concerns. The first concern affects the form and construct of the CBA evaluation question, namely:

- **The CIE favours the ‘problem reduction approach’, but has over-counted the cost side:** The principle of symmetry in the reporting the relationship between costs and benefits is such that if not all the people receiving benefits are counted, then costs should be shared (attributed) in a way that matches the benefit side. To do otherwise would distort the relationship between benefits and costs (i.e. the efficiency in resource use). We wish to note here that the problem reduction approach does have merit. Even if a full societal evaluation of an intervention is shown to be good value (i.e. net benefits), if the intervention only addresses a small part of the problem being addressed, that is important information and provokes consideration of how to address the remaining extent of the problem. This raises the scope for complementary initiatives (such as matching available housing to those with housing needs). So whilst we support retention of the cost reduction approach, we believe the results are given too much weight.

The remaining three issues are either structural or methodological:

- **The CIE ‘willingness to pay’ approach under-counts the benefit side:** Our Table ES2 (p.6) lists the range of benefits considered in each of Tables 7.2 & 7.3 of the CIE Report. In Section 3.2, we stress the independence of what the benefits are measuring. With the exception of WTP for altruism, Table 7.2 values the benefits of resource savings, whereas Table 7.3 values the improved amenity. These different estimates of benefits are not different ways of measuring the same impacts, but are at least partially if not entirely additive. They should therefore be combined in the CBA.
- **The CIE approach to measuring the opportunity cost of space ignored capital gain:** The monetary value of the additional space required to implement the building code reforms in the CIE report only captures the benefits of enhanced functionality, mainly through increased accessibility. Whereas the purchase cost of the additional space is included in the analysis of costs, the benefits do not recognise the retained value of the asset. The CBA should distinguish between the enduring market value of the asset and the value of the utility from the use of that asset.

- **The discount rate:** It is understood that the choice of a discount rate of 7% p.a. reflects OBPR guidelines. Whilst the OBPR guidelines provide consistency in the approaches to the evaluation of the impacts of regulatory reforms, there is clearly a consensus amongst economists and financial analysts that 7% is well in excess of the appropriate rate in market circumstances that have prevailed for some time now. We provide indicative results for using a 3% discount rate to all re-analyses.

The cumulative impact of the first two of these methodological issues alone is sufficient to reverse the conclusions of the CIE report. Even allowing for a 7% discount rate and 25% overlap in the benefits contained in Tables 7.2 & 7.3, the CBA ratio ranges from 0.95 for Option 3 up to 2.46 for Option 1. Without overlap, all Options become attractive (>1.00) ranging up to 2.87 for Option 1. If a 3% discount rate is then applied, the CBA ratios increase to between 1.38 and 3.49.

An economic evaluation that takes a full societal perspective would provide a strong case for implementation of Option 1 (Silver) and potentially Options 2 (Gold) & 5 (Subsidy). The additional methodological or social justice issues in Sections 2 and 3 of our report have less impact individually than those highlighted here, but the net effect of their application would be to further strengthen these conclusions. Our inability to access the model meant that it has not been possible to estimate the cumulative impact of these remaining issues.

Thus an economic evaluation that accommodates these changes to the CBA would provide sufficient reason alone to justify adoption of Option 2 (Gold) in the revisions to the building code. It is important to stress that this conclusion derives purely from our re-analysis of the CIE social benefit cost analysis. If the social justice arguments for revisions to the building code discussed in Section 2 are added, the case for reform of the building codes is compelling.

In conclusion, we consider that the economic credentials for all options considered by the CIE are considerably stronger than those presented in their report. While the CIE favoured continuation of a voluntary code, we conclude that a social benefit code analysis based on our advice would underpin the case for adding a regulation to the national building code. We appreciate that the choice of which particular option to specify in a regulation will reflect factors in addition to these benefit cost ratios, including functionality for the elderly and those with disabilities, particularly for those in wheelchairs. Option 2 (Gold standard) has particular merit in this regard, as the most cost-effective of the options that achieve functionality for those in wheelchairs.

Furthermore, given that an effective and efficient market of housing for people with disability requires reliable and detailed information on accessible housing stock, an additional option that might be considered for analysis is a policy package that includes an enhanced matching service between suitable housing and those with housing needs. Indeed, encouraging a match between the stock of accessible housing and those with accessible housing needs is central to the calculation of net benefit in practice.

We therefore suggest that a combination of options should also be assessed, namely combining Option 5 (a subsidy program to encourage availability of accessible rental properties) with Option 1 (Silver standard) and Option 2 (Gold standard). A consideration here is that many of those with accessible housing needs may have insufficient income to compete for accessible housing as it enters the marketplace. As noted above the benefits of the subsidy option exceed the costs, based on our revised analysis, but there will be overlapping benefits with Options 1 or 2 and these should not be double counted. Further analysis of this point should therefore be undertaken utilising the CIE model, to which we do not have access.

Appendix 1

Policy Audit of key human rights frameworks related to housing for persons with disabilities and older people

(Prepared by Alicia Yon, University of Melbourne)

In accordance with Article 11 (1) of the UN International Covenant on Economic, Social and Cultural Rights (ICESCR), housing must be conceptualised as 'adequate housing'. 'Adequate shelter [housing] means ... adequate security [**safety**], adequate privacy [**safety/habitability**], adequate lighting and ventilation [**safety/habitability/health**], adequate space [**accessibility/ safety/habitability**], adequate basic infrastructure [**accessibility/habitability**] and adequate location [**accessibility/affordability**] with regard to work and basic facilities - all at a reasonable cost [**affordability**]' (ICESCR, 1991, p. 2). The bold concepts, including **equity** as a key human rights concept, were used as criteria to evaluate the frameworks in relation to housing-related aspects.

The term 'States Parties' relates to all countries who are signatory to cited international frameworks, including Australia.

Note: all source documents have been hyperlinked.

Framework	Accessibility	Health	Safety/habitability	Equity	Affordability	Notes
International human rights frameworks for disability and ageing, acceded to by the Commonwealth of Australia						
Universal Declaration of Human Rights (UDHR) Article 25 (1) states: <i>'Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including [...] housing [...].'</i>	Housing is not adequate if the specific needs of disadvantaged and marginalised groups are not taken into account. Universal design should also be considered as a priority for newly built housing, services and facilities. Physical accessibility is an important component of the right to water.	Housing is not adequate if it detrimentally affects the right to health such as a lack of safe drinking water and sanitation. The health domain is supported by the Right to Water Fact Sheet No. 35 .	General comments No. 4 on the right to adequate housing: Housing is not adequate if it does not guarantee physical safety or provide adequate space, as well as protection against the cold, damp, heat, rain, wind, other threats to health and structural hazards.	Right to adequate housing principle of non-discrimination.	General comments No. 4 on the right to adequate housing: housing is not adequate if its cost threatens or compromises the occupants' enjoyment of other human rights.	Considers adequate housing as a basic human right. The UDHR is supported by the Right to Adequate Housing Fact Sheet 21 (Rev. 1) .
International Covenant on Economic, Social and Cultural Rights (ICESCR)	Disadvantaged groups, including the	Article 28 (20): (a) To ensure equal	As above.	Article 2 (2) provides that all of the rights in	As above.	It is the most important UN

Framework	Accessibility	Health	Safety/ habitability	Equity	Affordability	Notes
Social and Cultural Rights (ICESCR) Article 11 (1) states: <i>'The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including [...] housing [...].'</i>	elderly, physically disabled, persons with persistent medical problems, and the mentally ill, must be given priority consideration and full and access to adequate housing resources.	<p>access by persons with disabilities to clean water services, and to ensure access to appropriate and affordable services, devices and other assistance for disability-related needs; [...].</p> <p>States Parties should apply the Health Principles of Housing which view housing as the environmental factor most frequently associated with conditions for disease.</p>		<p>the ICESCR must be exercised without discrimination.</p> <p>Right to adequate housing principle of non-discrimination.</p>		<p>instrument that enshrines the right to housing.</p> <p>The ICESCR is supported by the Right to Adequate Housing Fact Sheet 21 (Rev. 1).</p>
Convention on Rights of Persons with Disabilities (CRPD) Article 19: Living independently and being included in the community. Article 28 (1) states: Adequate standard of living and social protection [...] including housing .	<p>Article 3 General principles: (6) accessibility.</p> <p>Article 4 General obligations: accessibility.</p> <p>Article 9 – 1 (a): To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure on an equal basis with others through the elimination</p>	<p>Article 4 General obligations: mental health and development.</p> <p>The health domain is supported by the Right to Water Fact Sheet No. 35. Relevant provisions include: water and sanitation facilities must be physically accessible and within safe reach for all sections of the population, taking into account the</p>	<p>In order to promote equality and eliminate discrimination, States Parties shall take all appropriate steps to ensure that reasonable accommodation is provided.</p>	<p>Article 3 General principles: (2) non-discrimination; (3) full and effective participation and inclusion in society.</p> <p>Article 4 General obligations: addresses inequality.</p> <p>Article 4 (b): States Parties must take all appropriate measures, including legislation, to modify or abolish existing laws,</p>	<p>Article 4 (f): To undertake or promote research and development of universally designed goods, services, equipment and facilities, as defined in Article 2 of the CRPD, which should require the minimum possible adaptation and the least cost to meet the specific needs of a person with disability, to promote their</p>	

Framework	Accessibility	Health	Safety/ habitability	Equity	Affordability	Notes
	<p>of physical environment obstacles and barriers to accessibility in relation to housing.</p> <p>Article 9 - 2 (a): To develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public.</p>	<p>needs of [...] persons with disabilities [...] and the elderly.</p>		<p>regulations, customs and practices that constitute discrimination against persons with disabilities .</p> <p>Article 5 (3): States Parties shall take all appropriate steps to ensure that reasonable accommodation is provided.</p>	<p>availability and use, and to promote universal design in the development of standards and guidelines.</p>	
Principles for Older Persons (POP)	<p>Principle 1: Older persons should have access [...] shelter [...].</p> <p>Principle 5: Older persons should be able to live in environments that are [...] adaptable to personal preferences and changing capacities.</p> <p>Principle 6: Older persons should be able to reside at home [life cycle housing] for as long as possible.</p>	<p>Principle 1: Older persons should have access to adequate water [...].</p>	<p>Principle 5: Older persons should be able to live in environments that are safe [...].</p>	<p>Principle 14: Older persons should be able to enjoy human rights and fundamental freedoms when residing in any shelter [...].</p> <p>Principle 18: Older persons should be treated fairly regardless of age, gender, racial or ethnic background, disability or other status [...].</p>		<p>These UN principles apply in the absence of a convention on the rights of older persons – currently being lobbied.</p>
National disability and ageing frameworks, enacted by the Commonwealth of Australia						
Australia's National Action Plan on Human Rights (NAP) The NAP states that all Australians should have access to	<p>Access to full range of areas for older people set out in Living Better reform package.</p>	<p>Priority area: health, housing [...].</p> <p>Priority area: aged care (risk to safety, health or wellbeing of care</p>	<p>Priority area: health, housing [...].</p>	<p>It re-affirms a commitment to improving the housing and living conditions of Australian citizens and the [...] social equity [...] of our cities</p>	<p>It re-affirms a commitment to improving the housing and living conditions of Australian citizens and the</p>	

Framework	Accessibility	Health	Safety/ habitability	Equity	Affordability	Notes
affordable, adequate and appropriate housing.	Accessibility initiatives: Accessible Communities grants, Livable Housing Design to make local buildings and public spaces more accessible for people with disability.	recipients is identified).		and regional areas. Priority area: freedom from discrimination (e.g. Livable Housing Design, NDIS).	economic efficiency ... of our cities and regional areas.	
National Disability Strategy (NDS)	<p>Strong commitment to affordable housing.</p> <p>Policy area 1: Inclusive and accessible communities - the physical environment including [...] buildings and housing [...].</p> <p>NDP underpinned by principles including: universal approach, life course approach, person-centred, independent living.</p>	<p>Policy area 6: Health and wellbeing - health services, health promotion and the interaction between health and disability systems; wellbeing and enjoyment of life.</p>	<p>The Strategy seeks to ensure safety of people with disability through universal design principles.</p> <p>Areas for future action include developing innovations to improve security of housing across all forms of tenure.</p>	<p>Policy area 2: Rights protection, justice and legislation — statutory protections such as anti-discrimination measures [...].</p>	<p>Strong commitment to affordable housing - Policy Direction 3: Improve access to housing options that are affordable and provide security of tenure.</p> <p>Adequate housing should not be cost prohibitive. Application of universal design principles [...] results in greater efficiency without the needs for without the need for costly add-ons or specialised assistance.</p> <p>Areas for future action include developing innovations to improve affordability of housing across all forms of tenure.</p>	<p>Consultations on developing updated strategy have been put on hold due to COVID-19.</p>

Framework	Accessibility	Health	Safety/habitability	Equity	Affordability	Notes
Disability Discrimination Act 1992 Cth (DDA)	Section 31: Disability Standards in relation to reasonable adjustments relates to the Disability (Access to Premises – Buildings) relating to access to building, lifts, car parking.	Disability (Access to Premises – Buildings) Schedule 1 Access Code for Buildings A1(d)(iii) (B) impacts on the [...] health [including sanitary and other facilities] of the occupants in relation to the provisions of the BCA.	Disability (Access to Premises – Buildings) Schedule 1 Access Code for Buildings A1(d)(iii) (B) impacts on the safety [...] of the occupants in relation to the provisions of the BCA	Direct and indirect discrimination provisions - Section 23: Access to premises (enter and/or use when renting or trying to rent a room in a boarding house, flat, unit or house). Section 25: Accommodation (full suite of provisions relevant to housing). Disability (Access to Premises – Buildings) Schedule 1, Part 1(1.3)(a): to ensure that dignified, equitable [...] access to buildings, and facilities and services within buildings, is provided for people with a disability.	Disability (Access to Premises – Buildings) Schedule 1, Part 1(1.3)(a): to ensure that cost-effective and reasonably achievable access to buildings, and facilities and services within buildings, is provided for people with a disability.	The DDA is supported by the Disability (Access to Premises – Buildings) contained in Schedule 1 of the BCA.
National Disability Insurance Scheme (NDIS) Relevant guidelines relate to the Specialist Disability Accommodation Design Standard and Home Modifications.	Home modifications Section 34 (1)(d): Reasonable and necessary supports: the support will be, or is likely to be, effective [appropriate in terms of access and use] for the participant, having regard to current good practice. Therefore, consideration	SDA Design Standard includes minimum health requirements in relation to heating, sanitation, weather protection, etc.	SDA Design Standard includes minimum safety requirements in relation to siting, access, etc.		Home modifications Section 34 (1)(c): Reasonable and necessary supports: the support represents value for money in that the costs of the support are reasonable [...].	

Framework	Accessibility	Health	Safety/ habitability	Equity	Affordability	Notes
	<p>must be given to any structural constraints such as size, surrounding terrain, or the condition of the building [...].</p> <p>Accessibility of standard fixtures and fittings in frequently used rooms and spaces.</p> <p>SDA Design Standard includes minimum accessibility requirements for buildings and car parking.</p>					

Table Notes:

Appendix 2

Lived experience and social, health and economic impacts of inaccessible housing | Accessible
Housing Survey Report



Dr Ilan Wiesel
School of Geography

Lived experience and social, health and economic impacts of inaccessible housing

Report submitted to the Australian Building Codes
Board RIS

31 August 2020

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Executive summary

The study included an online questionnaire that elicited 1,187 responses, followed by 45 in-depth interviews, conducted in August 2020. It was initiated in response to the Australian Building Codes Board's (ABCB) consultation on a proposal to include minimum accessibility standards for housing in the National Construction Code. The aim of the study was to address a gap in both qualitative and quantitative (but not monetised) data about the lived experience and social, health and economic benefits of accessible housing. It brings the voices of hundreds of Australians with disability and other mobility limitations into the ABSB consultation.

The analysis presented in this report is focused on measuring and understanding:

- accessible and inaccessible features in the homes of people with mobility restrictions
- mental health and wellbeing outcomes of living in accessible or inaccessible homes
- impacts of housing accessibility on ability to move around the house and perform self-care and homecare activities
- impacts of housing accessibility on social and family relations
- impacts of housing accessibility on need for paid and unpaid support
- impacts of housing accessibility on employment and productivity
- impacts of housing accessibility on housing choice and mobility, including ability to move to another home and ability to stay home and avoid forced moves to other residences or supported accommodation.

Key findings from the study are summarised as follows:

- The majority (73.6%) of respondents live in housing that does not meet, or only partly meets, their accessibility need. People with lower level of impairment were more likely to live in inaccessible housing, possibly because of ineligibility for funds for home modifications, social housing, or specialist housing. People with lower income were more likely to live in inaccessible housing, due to affordability barriers to purchase or rent an accessible home, or to modify their homes. Private renters were most likely to live in inaccessible home (87.6%), but high incidence of inaccessible homes was also recorded for homeowners (71.5%) and social renters (74.8%). Although significantly more accessible than mainstream housing, partial inaccessibility was surprisingly high even in specialist disability housing such as group homes (47.1%) and supported residential services (46.2%).
- Compared to housing constructed to affordability standards, post-construction modifications were more likely to only partly meet people's accessibility requirements. While close to half (46.6%) of survey respondents lived in homes that were modified, most of those (39.1%) reported these modifications met only some of their accessibility needs.
- When modifications are undertaken exclusively in the homes of people who have mobility restrictions, they are unable to visit the homes of their family and friends, resulting in significant social isolation. 80.8% of survey respondents agreed or strongly agreed with the statement "I can't visit friends and family whose homes are inaccessible".
- Individuals' accessibility needs change over the life course, due to ageing, injuries (often due to inaccessibility of homes), and deterioration of disability or illness, requiring ongoing modifications, highlighting need for houses as adaptable as possible, such that they can continue to be modified more effectively and cheaply over time.
- The proportion of survey respondents who lived in housing that was built in a way that meets all their accessibility needs (18.7%), was more than twice as high as those who lived in housing modified to meet all their accessibility needs (7.4%), demonstrating that building to accessible standard is more effective than post-construction modifications.

- Survey respondents living in homes that were not modified or only partly modified, reported inaccessible housing features further limited their ability to move into and out of their home, and complete self-care and home-care activities. Home-care activities (such as home cleaning) were most limited by housing design, and movement inside the home was the least limited. Inaccessible housing was more limiting for people with high support needs, especially in relation to movement inside the house and home care activities.
- Close to one-third of survey respondents reported lack of accessible housing has resulted in job loss, missed job opportunities, reduced work hours, or reduced productivity at work.
- Many survey respondents and interview participants reported difficulties finding accessible homes close to employment opportunities, while fatigue from living in inaccessible home and the additional time and energy spent on self-care and home-care, reduces productivity, motivation, self-confidence and capacity to work, study or volunteer.
- Inaccessible housing increases support needs for most (65.8-67.1%) of people with high support needs, including both paid and unpaid support. Just over half (51.2%) of people with low support needs living in inaccessible housing reported an increase in need for informal care, and 42.0% of those reported an increase in paid disability support.
- Approximately a quarter (23.0-27.8%) of people with high support needs, and a fifth (20.0-18.8%) of people with low support needs living in accessible or modified homes reported a decrease in their paid and unpaid support needs thanks to accessible design.
- Participants reported spending high proportions of their NDIS support funding on support for self-care activities they could have done independently in more accessible homes.
- Unnecessary reliance on paid or unpaid support for such activities is not only economically inefficient, but bears additional social and health costs, such as adverse impacts on relations with family members providing informal care; on employment opportunities (e.g. reliance on availability of support to be able to get organised in the morning for work); and on sense of independence and dignity.
- Housing accessibility or inaccessibility has significant impact on self-reported mental health and wellbeing. 60.0% of people with both low and high support needs living in accessible housing reported improved self-reported mental health and wellbeing, thanks to the accessibility of their home. In contrast, 71.7% of people with high support needs, and 50.0% of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing.
- Participants with high support needs living in inaccessible homes were more likely to express concern about risks such as difficulty affording necessary home modifications in the future (85.7%), being forced to move to another residence (68.0%), or to a nursing home (58.9%). This compares with a minority of people living in accessible homes who reported similar concerns. However, ability to afford home modifications remains a concern even for those living in accessible homes (47.5% of those with high support needs, and 44.2% of those with low support needs) indicating that needs change over time, highlighting the importance of adaptable housing.
- The shortage in accessible housing significantly limits housing choice for people with mobility restriction, especially those with high support needs. Nearly half (48.1%) of people with high support needs living in inaccessible homes, and close to a third (30.7%) of those living in accessible homes, reported a desire to move home but being limited by difficulty finding accessible housing elsewhere. Difficulty finding accessible housing was the key barrier to moving home. People who have already made a substantial investment in modifying their residence are discouraged from moving home when their household or employment circumstances change.

The report concludes that:

- 1) Existing strategies such as a voluntary building code, reliance on home modifications or provision of accessible social housing have failed to deliver accessible housing for most people with mobility restrictions. Building all new homes to accessible standard will be the most effective way to address the shortage in accessible housing.

- 2) The impact of inaccessible housing on dignity, freedom, social inclusion, health, and workforce participation is profound, and the report presents robust quantitative and qualitative evidence of these. Such impacts must not be measured exclusively in dollar value; rather, the social justice argument for addressing the indignities experienced by people with mobility restrictions must be front and centre to the RIS Consultation considerations.
- 3) Notwithstanding the above, the data indicates the CIE RIS Consultation report has underestimated the economic costs of inaccessible housing, by ignoring impacts on workforce participation and productivity of people with mobility restrictions; underestimating the impact on paid and unpaid support needs; underestimating adverse impacts on mental health and wellbeing; and, underestimating the extent to which a shortage in accessible housing limits housing choice and mobility.
- 4) The range of domestic activities for which paid support is provided, and which can be reduced by accessible housing is broader and more significant than estimated by CIE. The CIE only focused on paid and unpaid assistance with mobility tasks¹, whereas inaccessible housing also significantly increases need for assistance with self-care and homecare. Furthermore, in estimating the impact on support needs, the CIE excluded those living in housing that has already been modified due to disability or age, assuming that modified housing is fully accessible². However, the qualitative survey shows that most people whose homes have been modified, consider these modifications to only partly address their needs, and they too require additional paid or unpaid support due to inaccessible homes.

¹ The CIE Proposal to include minimum accessibility standards for housing in the National Construction Code, July 2020, p140

² *ibid*, p140

1. Introduction

Extrapolating from Australian Bureau of Statistics (ABS) data and population projections, the Centre for International Economics (CIE) estimated that the number of Australians with a mobility-related disability will increase from 2.9 million in 2018 to around 4.7 million people over the next 40 years, due to population growth and an ageing population. Many people with mobility restrictions have trouble finding housing that meets their accessibility needs. The Australian Building Codes Board (ABCB) is currently investigating options to address this problem and has engaged CIE to develop a Regulatory Impact Statement (RIS) Consultation.

The CIE analysis³ is focused on quantifying the economic costs and benefits of regulation, with limited reference to equity considerations and in the absence of any qualitative analysis. The Office of Best Practice Regulation in their Guidance Note on Cost-Benefit Analysis⁴ states:

- ‘CBA [Cost Benefit Analysis] requires you to identify explicitly the ways in which the proposal makes individuals better or worse off.’⁵
- ‘You should report cost and benefit estimates within three categories:
 - monetised
 - quantified, but not monetised
 - qualitative, but not quantified or monetised.’⁶

The study reported here was initiated in response to the CIE Consultation RIS, and was designed to address a gap in both quantitative (but not monetised) and qualitative (but not quantified or monetised) data about the social, health and economic benefits of accessible housing.

With over 1187 survey responses, and 40 in-depth interviews, the report presents some the most comprehensive data ever collected in Australia about the lived experience of people with mobility limitations living in accessible or inaccessible housing. It brings the voices of hundreds of Australians with disability into the RIS Consultation and the policy debate about the need for regulatory reform in housing accessibility standards.

The analysis presented in this report is focused on measuring and understanding:

- accessibility and inaccessible features in the homes of people with mobility restrictions
- mental health and wellbeing outcomes of living in accessible or inaccessible homes
- impacts of housing accessibility on ability to perform self-care and homecare activities
- impacts of housing accessibility on social and family relations
- impacts of housing accessibility on need for paid and unpaid support
- impacts of housing accessibility on employment and productivity
- impacts of housing accessibility on housing choice and mobility, including ability to move to another home and ability to stay home and avoid forced moves to other residences or supported accommodation.

Although this report does not seek to directly translate findings into monetary costs or benefits, some of the findings presented challenge the assumptions underpinning the CIE analysis. The report also addresses the following questions raised by RIS Consultation:

- The impact of a lack of accessible housing on equity, dignity and employment outcomes is difficult to fully measure. How does a lack of accessible housing contribute to these issues?
- What other information could be used to estimate the costs associated with a lack of accessible housing to make estimates more reliable?

³ The Centre for International Economics (CIE), Proposal to include minimum accessibility standards for housing in the National Construction Code, Consultation Regulation Impact Statement, 2020

⁴ Office of Best Practice Regulation, Department of the Prime Minister and Cabinet, Cost-Benefit Analysis Guidance Note, February 2016

⁵ p. 4

⁶ p. 11

- Do you have information about the type and cost of home modifications that are made to improve the accessibility of a home?
- In your opinion what is the main contributor to a lack of uptake of universal design principles in new dwellings?
- Are our assumptions relating to the occupation of accessible housing by owner occupiers and renters over time reasonable? What additional evidence could we consider to make these assumptions more robust?
- To avoid attributing benefits to accessibility features already installed in dwellings under current arrangements, the impacts of the proposal have been reduced in proportion to those elements assumed prevalence and weighted average cost. What additional evidence could we consider to make this assumption more robust?

The scope of the study was limited to understanding the lived experiences of adults with mobility limitations. While some evidence presented is indicative of major impacts of inaccessible homes on informal carers of people with mobility restrictions, in-depth analysis of such impacts was beyond its scope. Further research is needed on the impact of inaccessible housing on wellbeing, physical and mental health, social inclusion, economic productivity and personal freedom and empowerment outcomes for informal carers. Further research is also needed on the impact of inaccessible housing on families with children with disability.

This report presents only a first cut of the data, and further work will be undertaken to analyse at more depth the extensive interview and survey data that has been collected. A key focus of the work will involve analysis of how specific accessibility features impact on specific activity restrictions at home, and the impacts on social, health and employment outcomes. A second report will be published in November 2020, followed by a series of scholarly publications.

The study was co-sponsored by the Summer Foundation and Melbourne Disability Institute (MDI). It was given ethics approval by the University of Melbourne, Science Faculty Human Research Ethics Committee (approval number 2057641).

2. Method

The study method consisted of two primary elements: an online questionnaire (1,178 responses) and 40 in-depth follow-up interviews.

1.1. Online questionnaire

An online questionnaire was distributed on the 17th August 2020 and closed for responses on the 28th August. A link to the survey was circulated widely via email through disability services and advocacy networks.

The questionnaire targeted people over 18 years old with a mobility impairment. It could be filled by the person with a disability or another person assisting them.

The questions included:

- standard demographic information about the respondent (age, gender, occupation, income).
- information about their disability (impairment type and severity, need for assistance with mobility and self-care, and use of mobility aids).
- information about their housing situation (dwelling type, tenure).
- the accessibility of their home (accessibility features; modifications undertaken).
- impact of accessibility in their current home on:
 - ability to perform domestic activities (moving around, self-care, home care)
 - ability to study, work, or volunteer
 - need for paid or unpaid support
 - social and family relations
 - health and wellbeing, including risk of injury
 - risk of being forced to move home
- wider shortage in accessible housing and its impacts on ability to move home; ability to visit friends and family in their home; employment opportunities.
- interest in participating in follow up interview.

The response to the online questionnaire was overwhelming, with 1,178 responses between the 17th and 28th August. 100 responses were excluded from analysis due to insufficient data.

Analysis of the survey data was undertaken by a statistician (Liss Ralston), and sought to identify patterns in the social, economic and health impacts of housing accessibility or inaccessibility. The large number of responses allowed differentiating results for people living in accessible homes VS those living in inaccessible homes; and, for people with different levels of disability and support needs.

Respondent's level of support needs was assessed based on their responses to two questions: frequency of need for support with body movement and self-care; and, whether they receive NDIS funding.

Table 1: Survey sample characteristics

	Category	Count	Column N %
What is your age?	18-30	184	17.1%
	31-50	374	34.8%
	51-65	349	32.4%
	66-75	126	11.7%
	76 or older	43	4.0%
	Total	1076	100%
What gender do you identify with?	Male	330	30.6%
	Female	719	66.7%
	Non-binary	29	2.7%
	Total	1078	100%
How often do you need help with body movement or self-care?	Never	114	11.8%
	Sometimes	395	40.8%
	Often	460	47.5%
	Total	969	100%
Do you receive individual funding from the NDIS?	Yes	616	63.6%
	No	339	35.0%
	Not sure	14	1.4%
	Total	969	100%
How long have you lived in your current home?	Less than a year	82	10.1%
	1-4 years	216	26.6%
	5-9 years	162	20.0%
	10-19 years	176	21.7%
	20 years or more	175	21.6%
	Total	811	100%
What is your employment status?	Employed full time	71	8.5%
	Employed part time	141	16.8%
	Receiving Disability Support Pension	358	42.8%
	Unemployed - seeking work	36	4.3%
	Unemployed - not seeking work	76	9.1%
	Retired	134	16.0%
	Other	113	13.5%
	Total	837	100%
What is your personal annual income (before tax)?	\$37,000 or less	466	58.5%
	Between \$37,001 and \$48,000	69	8.7%
	Between \$48,001 and \$90,000	77	9.7%
	Between \$90,001 and \$126,000	40	5.0%
	between \$126,001 and \$260,000	13	1.6%
	\$260,0001 or more	1	0.1%
	Prefer not to say	131	16.4%
	Total	797	100%

Table 2: Classifying ‘High’ and ‘Low’ support needs

		House Design			
		Enabling	Limiting	Total	
Disability level	Low	21.5%	78.5%	100%	288
	High	28.5%	71.5%	100%	657
	Total	26.3%	73.7%	100%	945
		249	696	945	

1.2. Remote interviews

In-depth interviews were conducted with 40 participants who expressed an interest and provided their contact details in the online questionnaire. Due to COVID19 social distancing restrictions in Melbourne, all interviews were conducted remotely over the phone or videoconference (using Zoom). Most interviews lasted between 45-60 minutes, and were conducted between the 19th-28th August, by a team of four research assistants. With participants’ consent, all interviews were audio recorded for transcription. Each interviewee received a \$50 shopping e-voucher as a recompense for their time.

Survey data allowed us to select of participants based on their questionnaire responses. In selection of participants we sought a diversity of people in terms of:

- housing tenures – with a focus on homeowners and private renters
- demographics (age, gender, disability type and severity)
- accessibility features and barriers in their home
- impacts of accessibility or inaccessibility on daily life, social relations, work opportunities and health.

Due to the short timeframe for the interviews, logistics such as the availability of participants and researchers also played a key role in selection of participants.

The interviews were semi-structured, with the focus of questions adjusted to each participant’s individual circumstances, allowing participants to construct narratives in ways that are less restricted by a pre-conceived format. The themes covered in the interviews corresponded with those of the online questionnaire, but more open-ended in their style to allow participants to share further detail about their housing and life circumstances.

- About the person (e.g. Where do you live? What is your main occupation?)
- About the person’s disability and mobility limitations (e.g. What kind of physical impairment do you have? How long have you had it? How does your impairment impact on your mobility, support needs?)
- About the person’s home (e.g. When and why did you move into this home? Who do you live with and what is their relationship to you? How would you describe the accessibility standard of your home? What are the main features of your home that limit your ability to move around and carry out domestic activities? What are the main features of your home that enhance your ability to move around and carry out domestic activities?)
- Home modifications (e.g. Have you done any home modifications to improve the accessibility of your home? If so, what and why? What were the main difficulties in getting these or other modifications done? In what ways did these modifications change your life? Do you expect that you will need to take home modifications in the future?)
- Impacts of housing design on study, work, and volunteering (e.g. Does the accessibility of your home or difficulty finding accessible housing limit your opportunities to work or volunteer? Does the accessibility of your home or difficulty finding accessible housing limit your opportunities to study?)

- Impact on social life (e.g. How does accessibility or inaccessibility of your own home impact your ability to have a social life, maintain social connections with friends and family – within and outside your household? How does accessibility or inaccessibility of other people's home impact your ability to have a social life, maintain social connections with friends and family?)
- Impact on support needs (e.g. Do you need support from other people to do certain things at home? What if any modifications to your home might reduce your need for support?)
- Other impacts (e.g. Have you ever experienced injury because of difficulty getting in and around your home? How concerned are you about the risk of future injury for that reason? Are you concerned that you might be forced to move to another residence or a nursing home because of accessibility issues? Have you ever had trouble moving home because of difficulty finding accessible housing?)
- Concluding question (All things considered, how does the accessibility/inaccessibility of your home impact on your health, wellbeing, and life opportunities? How different would your life be if you had a more/less accessible home?)

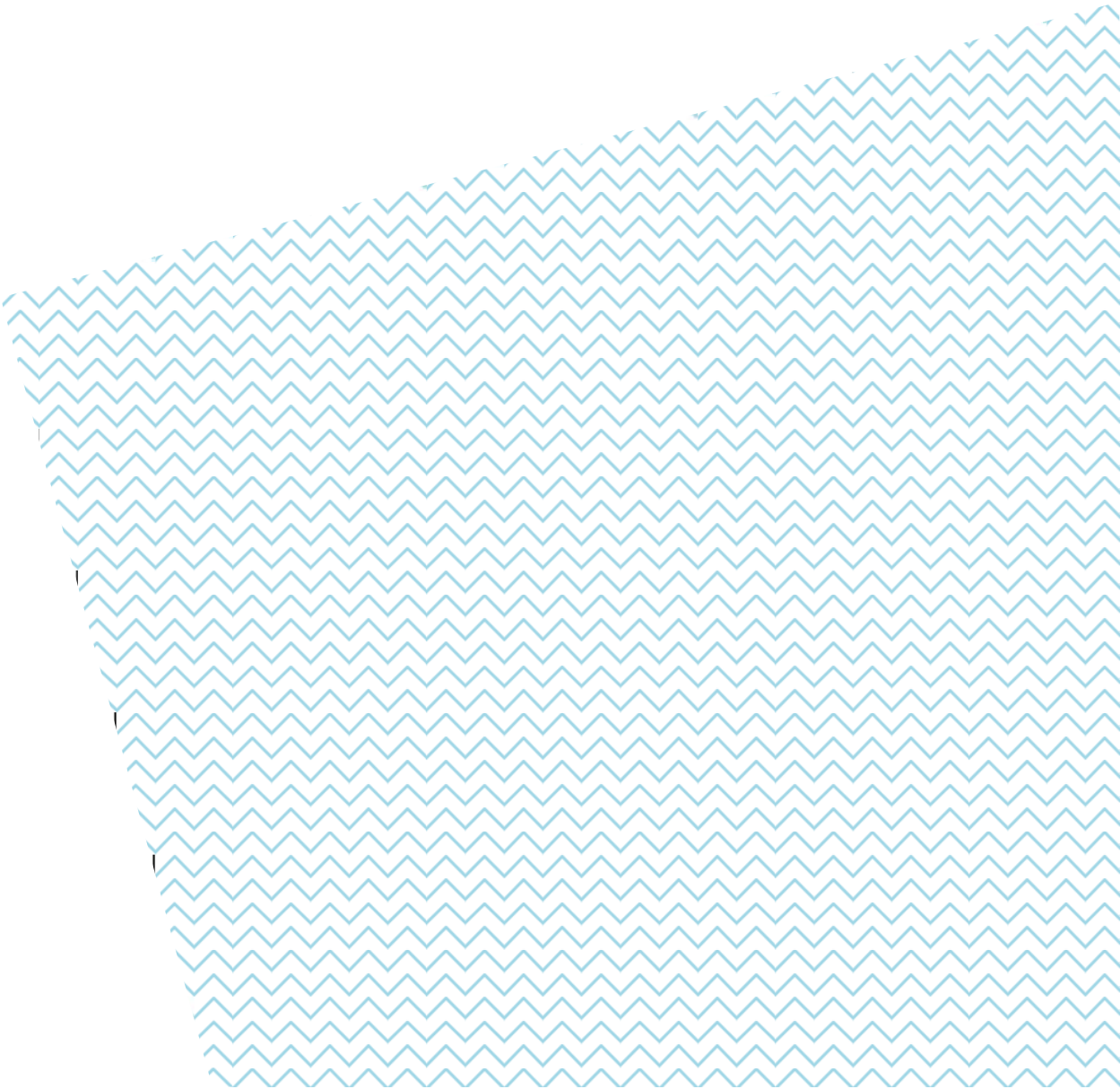
A 2-3-page interview summary was completed by the interviewer for every participant they interviewed. The summary was structured around the 9 interview themes. In this report we draw on these summaries to present some participants' stories as 'case studies' that illustrate how accessibility or inaccessibility features impact on a person's social, health and economic outcomes in a more holistic context of a person's life.

In Phase 2 of the study, which will commence in September 2020, all interview recordings will be fully transcribed and coded using NVivo software, to allow more comprehensive thematic analysis of the interview data.

Table 3: Interview participants, selected characteristics

	Category	Count
What is your age?	18-30	10
	31-50	15
	51-65	11
	66-75	7
	76 or older	2
What gender do you identify with?	Male	14
	Female	27
	Non-binary	4
Which of the following best describes your home...	Built accessible	14
	Modified fully accessible	6
	Modified partly accessible	11
	Not built or modified accessible	14
Tenure	Homeowner	15
	Private rental	11
	Social housing	12
	Group home	1
	Living with parents	4
	Living in partner's home	2
	Total	45

3. Results



1.3. Prevalence of accessibility and inaccessibility features

The majority (73.6%) of respondents live in housing that does not meet, or only partly meets, their accessibility need (Table 4). People with lower support needs were more likely to live in inaccessible housing, possibly because of ineligibility for funds for home modifications, or for social or specialist housing (Table 6). Private renters were most likely to live in inaccessible home (87.6%), but high incidence of inaccessible homes was also recorded for homeowners (71.5%) and social renters (74.8%). Although significantly more accessible than mainstream housing, partial inaccessibility was surprisingly high even in specialist disability housing such as group homes (47.1%) and supported residential services (46.2%) (Table 7). People with lower income face significant affordability barriers to purchase or rent an accessible home, or to modify their homes, resulting in higher proportions of people on lower income living in inaccessible homes (despite a higher proportion of low income people living in social housing).

Table 4: Housing accessibility classification

	Count	%	Classification
Built in a way that meets my accessibility needs	178	18.7%	Accessible
Modified to meet all my accessibility needs	71	7.4%	Accessible
Not built or modified to meet my accessibility needs	328	34.5%	Inaccessible
Modified to meet some of my accessibility needs	372	39.1%	Inaccessible
Total	949		

Only 21.3% of all respondents – including 37.0% of those who rated their home accessible – had reinforced walls around the toilet, shower and bath that may allow future installation of grabrails, indicating low level of adaptability to changing future needs. The features least often included in dwellings ranked as ‘inaccessible’ were wide internal doors and corridors, and hobless shower recesses (Table 5).

Table 5: Accessibility features in respondents’ homes

	Self-Rated Home Accessibility				All respondents	
	Accessible		Inaccessible		Count	%
	Count	%	Count	%	Count	%
Safe continuous step-free path from the street or parking to the entrance	177	77.0%	238	39.3%	417	49.5%
At least one step-free entrance	134	58.3%	240	39.6%	375	44.5%
Internal doors and corridors that facilitate comfortable and unimpeded movement	193	83.9%	199	32.8%	394	46.8%
A toilet on entry level that is easy to access	197	85.7%	371	61.2%	569	67.6%
A bathroom that contains a hobless shower recess	185	80.4%	244	40.3%	430	51.1%
Grabrails in the toilet, shower, or bath	134	58.3%	298	49.2%	433	51.4%
Reinforced walls around the toilet, shower and bath that may allow future installation of grabrails	85	37.0%	93	15.3%	179	21.3%
Stairways with a handrail	41	17.8%	140	23.1%	185	22.0%
Stairways without a handrail	6	2.6%	57	9.4%	63	7.5%
	230		606		842	

Table 6: Housing accessibility by support needs

	House Design			
	Accessible	Inaccessible	Total	
Low support needs	21.5%	78.5%	100%	288
High support needs	28.5%	71.5%	100%	657
Total	26.3%	73.7%	100%	945
	249	696	945	

Table 7: Housing accessibility by tenure

	Built in a way that meets my accessibility needs	Modified to meet all my accessibility needs	Accessible	Not built or modified to meet my accessibility needs	Modified to meet some of my accessibility needs	Inaccessible	Total
Homeowners	17.7%	10.8%	28.5%	26.0%	45.5%	71.5%	100%
Private rental	9.8%	2.6%	12.4%	64.2%	23.3%	87.6%	100%
Social housing	23.5%	1.7%	25.2%	30.4%	44.3%	74.8%	100%
Living with parents or other relatives in their home	20.1%	9.8%	29.9%	29.3%	40.8%	70.1%	100%
Other	29.4%	0.0%	29.4%	35.3%	35.3%	70.6%	100%
Group home	35.3%	17.6%	52.9%	11.8%	35.3%	47.1%	100%
Supported Residential Service	46.2%	7.7%	53.8%	11.5%	34.6%	46.2%	100%
Hostel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%
Total	18.8%	7.5%	26.3%	34.6%	39.1%	73.7%	100%

39.1% of survey respondents lived in homes fully modified to meet their accessibility needs, more than twice as many as those who lived in homes that were built in a way that meets their accessibility needs (18.7%). The survey and interview data highlighted five issues related to such reliance on home modifications to meet accessibility needs.

First, participants faced a range of barriers to home modifications:

- Affordability and funding restrictions: many people with disability have low incomes and therefore often cannot afford to pay for home modifications on their own. Most survey respondents expressed concern about ability to afford necessary home modifications. These concerns were strongest for people living in inaccessible homes (81.6% of those with low support needs, and 85.7% of those with high support needs). Yet concerns about ability to afford necessary home modifications remains a concern even for those living in accessible homes (44.2% and 47.5% respectively) highlighting changing accessibility needs over time, and the need for adaptable housing (Table 8).
- Many people are ineligible for NDIS or other funding for reasons such as low assessment of support needs or living in private rental. (see Rachel's story in box 1).
- Structural restrictions such as homes and rooms that are too small, or doorframes and hallways too narrow, preclude home modifications or limit their efficacy.
- Private renters face significant barriers to modifications, including difficulty getting landlord approval, home modification funding restrictions for renters, and housing precarity heightening the risk associated with personal financial investment in home modifications.
- Body corporate approval is required for structural modifications in apartments.
- Shortage in skilled builders for modifications (see Rachel's story in box 1 and Andrea's story in box 2).

Table 8: Ability to afford home modifications, by support needs

	Housing	Very Concerned	Somewhat concerned	Concerned (total)	Not Concerned	Total	N
Low support needs	Accessible home	16.3%	27.9%	44.2%	55.8%	100%	43
	Inaccessible home	49.4%	32.2%	81.6%	18.4%	100%	174
High support needs	Accessible home	21.3%	26.3%	47.5%	52.5%	100%	160
	Inaccessible home	57.7%	28.0%	85.7%	14.3%	100%	407

Second, compared to housing constructed to accessibility standards, post-construction modifications were more likely to only partly meet people with disabilities' accessibility requirements. While close to half (46.5%) of survey respondents lived in homes that were modified, most of those (40.2%) reported these modifications met only some of their accessibility needs. The proportion of survey respondents who lived in housing that was *built* in a way that meets all their accessibility needs (18.7%), was more than twice as high as those who lived in housing *modified* to meet all their accessibility needs (7.4%), demonstrating that building to accessible standard is more effective than post-construction modifications.

Third, when modifications are undertaken exclusively in the homes of people who have mobility restrictions, they are unable to visit the homes of their family and friends, resulting in significant social isolation. (see data and discussion in section 3.5).

Fourth, the reliance on modifications restricts people with disabilities' residential mobility (see section 3.7), as most dwellings are inaccessible. People who have already made a substantial investment in modifying their residence will be discouraged from moving home when their household or employment circumstances change. As commented by one survey respondent:

"I have thrown so much of my savings and you making my current home accessible that should I sell it I wouldn't be making a large profit margin that could be used to add accessibility and the new home. Modifications are made didn't add value to the property but have cost me over \$100,000. Therefore, trying to buy a new property and repeat this is financially disadvantageous"

Fifth, individuals' accessibility needs change over the life course, due to ageing, injuries (often due to inaccessibility of homes, see section 3.6), and deterioration of capacity, requiring ongoing modifications, highlighting need for houses as adaptable as possible, such that they can continue to be modified more effectively and cheaply over time (see Andrea's story in box 2).

Rachel's story

Rachel, in her 60s, works as an artist, and lives with her partner in a house that they own in Melbourne. Rachel had polio as a child and now lives with post-polio syndrome. Her mobility is significantly impaired by partial paralysis, and she can only walk short distances (up to 30 metres), has difficulties sitting up, lifting herself from a sitting to standing position, dressing and showering, though she continues to perform many of these activities independently. Her mobility is significantly declining over time and she expects to be in a wheelchair later in life.

Rachel and her partner bought a house in Melbourne twenty years ago and have continuously modified their home to meet her changing accessibility needs. These included installing a handrail next to three steps at the front of the house and constructing a ramp at the back to create level entry, which now serves as her entrance into the home. She has also modified the toilet, raising it six inches, and installed a hand shower on a sliding pole and a seat in the bath (her shower is too small to sit in). They have also modified the kitchen to increase the amount of accessible storage.

They have taken loans to finance these modifications, which otherwise they could not have afforded. But with limited income, Rachel had difficulty sourcing a competent and reliable builder for these modifications, instead compromising for an 'informal' and cheaper provider who delivered work of poorer quality.

"I was on a knife edge of anxiety the whole time ... It wasn't a very big loan but to me it was just terrifying. Because on the disability support pension it's very low fixed income. And to get into any kind of debt on that is scary."

Despite these compromises, home modifications have made a substantial difference to Rachel's life. Rachel converted her carport into an accessible artist's studio and commented: "An accessible home means an accessible workspace." Having an accessible home is also fundamental to connecting with her family and friends because she cannot meet them in their inaccessible homes. Her support needs are kept low, and independence high, thanks to accessibility features a home. Had Rachel's home not been accessible, she would have been forced to live in specialist disability housing, rather than living with her partner.

"I wouldn't be able to live in a home that was not accessible. I'd have to live in some kind of supported accommodation. So, accessibility in the home means that I can live with my family in my house and be independent. That's the main impact."

As Rachel's mobility continues to deteriorate, further modifications will be required in her bathroom, which she describes being in a "makeshift" condition at present. She would also like to create an accessible emergency exit from her home in case of a fire. But there are challenges getting modifications done. It is difficult to source an NDIS approved builder due to there being so few of them. Another challenge is finding accessible accommodation to live in while the bathroom modifications are being done. Furthermore, there is a limit to how much Rachel's home can be modified to adapt to her changing conditions: once she requires a wheelchair, she will need to move, as the house's hallways and doorframes are too narrow.

Andrea's story

Andrea, in her 20s, is a university student who lives in Melbourne with her family. Andrea fell ill almost a year ago with a disease that causes her to tremble and to experience seizures. She can walk on a flat surface for up to twenty metres using a frame for support. As her current home cannot accommodate a wheelchair, at present she only uses one when she is outdoors. She has difficulty independently carrying out daily activities such as getting her own food or showering. She uses two shower chairs to assist her with the latter task. She has not been approved for NDIS and she relies entirely on her family for daily support.

Andrea lives with her parents, siblings, and dog in a two-story house. The house has wide hallways and some wide doorframes that she can easily walk through using her walking frame. However, her bedroom is located on the second floor of the house and cannot be moved downstairs as she would then no longer have easy access to a bathroom. As a result, she must sit and use her arms to push herself up and down the stairs, a tiring process that restricts her to descending only once per day.

Within her home, a step into the shower makes it difficult for her to access the shower and old, uneven carpet has caused frequent falls – Andrea sustained four concussions in the past year as a result of tripping and hitting her head on her bedframe. Getting in and out of her home is also a challenge as every entrance into the house has steps. Her family investigated installing a ramp, but the cost was too prohibitive. Her father tried to fabricate a ramp himself, but it did not function well. Andrea's father – who works in construction – had previously registered for a course on accessible housing design, but the program was never run due to a lack of interest or no one qualified to teach it. Due to the difficulty in getting outside with her dog, Andrea often crawls around her house and backyard in order to spend time with him.

To solve these problems, her parents decided to move home. Finding a more accessible home was not easy, and Andrea commented: "Everywhere has steps. You don't realise until you actually have to look."

Eventually they found and bought a new single-story house that is not accessible but can be modified to meet Andrea's accessibility needs. Unfortunately, it is further away from public transport which will limit Andrea's ability to travel independently to study or work. The family intends to undertake modifications, including a ramp in the entry, a double shower bathroom with a built-in seat and a lower basin, and railings to the walls, and a modified kitchen with lower countertops. However, due to both financial constraints and difficulty finding builders who are qualified and willing to do this work, renovations will be completed progressively after the family moves in. Andrea is particularly anxious about climbing the three steps to enter the house, and says that while renovations are underway, she will "hide in my room the entire time." When the renovations are completed, Andrea hopes that she will be more independent, and need to ask for less help.

1.4. Ability to perform domestic activities

Survey respondents living in homes that were not modified or only partly modified, reported inaccessible housing features further limited their ability to move into and out of their home, and perform self-care and home-care activities. Home care activities (such as home cleaning) were most limited by housing design, and movement inside the home was the least limited. Inaccessible housing was more limiting for people with high support needs, especially in relation to movement inside the house and home care activities (Table 9).

Table 9: Housing design limitations on activities, by self-rated housing accessibility and support needs

Activities limited	Low support needs			High support needs		
	Accessible housing	Inaccessible housing	Total	Accessible housing	Inaccessible housing	Total
Entering and exiting the house	10.9%	60.7%	48.4%	5.7%	66.2%	48.4%
Internal Mobility	0.0%	37.6%	25.7%	1.9%	60.5%	41.0%
Personal Care	7.8%	60.1%	48.2%	10.9%	65.0%	49.7%
Home care	28.9%	75.1%	65.9%	34.0%	87.4%	73.2%
	51	181	232	165	398	563

Some participants reported prioritising certain activities over other – for instance by giving up showers - to reserve their energy for other activities (see for example box 3, Rowena’s story).

Box 3: Domestic activities limitations and trade-offs

Rowena’s story

Rowena, in her 50s, lives in Brisbane and works part-time as a consultant. Prior to falling ill, she worked in executive roles in the public sector. Rowena was diagnosed with chronic fatigue syndrome at the end of 2016. Her condition causes debilitating fatigue and limits the amount of energy she can expend over a day. Every action she takes involves a trade-off whereby, for example, the choice to prepare a meal, or work from home, means doing without a shower that day.

The inaccessibility of her home further limits her choices. To enter or exit her home, Rowena must climb one flight of stairs – there is no elevator – adding a significant drain on her limited daily energy. Each time she enters or exits her home means another activity that she needs to forego (e.g. washing up or spending time with friends or family). She is also concerned about the risk of having difficulty evacuating in the event of an emergency. Other inaccessible design features include her kitchen. It is draining for Rowena to lift her arms to reach the shelves. The height of her microwave is causing particular concern as it requires lifting hot food and could lead to an injury.

As Rowena depends on her livelihood, she prioritises her work when it comes to her energy levels, meaning that she ends up foregoing other aspects of her life, such as showering, when necessary. However, her latest medical results suggest that eight hours of work a week is currently too debilitating for her health. Rowena feels that if her home was designed in a way that enabled her to better balance her energy across the week, she may be able to sustain the eight hours without compromising her health.

There is no single design feature in her home that renders Rowena’s life impossible, but the culmination of a number of poorly designed features results in her having to make impossible tradeoffs, give up fundamental activities, leading to a significantly depleted quality of life. Having to choose between activities that most people take for granted (e.g. preparing meals versus showering) is an ongoing source of stress in its own right.

“Because I have a limited energy envelope, and because I’m expending energy from the climbing of stairs and lifting and so forth, that means I have less energy to do everything else.”

1.5. Ability to study, work, or volunteer

While many survey respondent and survey participants were unable to participate in study or paid/unpaid employments for reasons other than housing accessibility, for those who could participate housing design played an important role in either limiting or enabling work or study.

Excluding those for whom this question was inapplicable (i.e. other reasons preventing paid employment), 96.2% of survey respondents with low support needs, and 88.6% of those with high support needs, living in accessible homes reported their homes were ‘enabling’ to having paid employment. In contrast, 47.9% of survey respondents with low support needs, and 62.5% of those with high support needs, living in inaccessible homes reported their homes were ‘limiting’ their ability to have paid employment. Similar results were recorded for study and volunteer work (table 10).

Table 10: To what extent does the design of your home enable or limit your ability to work, study or volunteer

Low support needs		Limiting	Enabling	Total	Count
Study in secondary, tertiary, or continuing education	Accessible home	6.1%	93.9%	100%	33
	Inaccessible home	39.7%	60.3%	100%	63
Have paid employment	Accessible home	3.8%	96.2%	100%	26
	Inaccessible home	47.9%	52.1%	100%	73
Do volunteer work	Accessible home	11.1%	88.9%	100%	27
	Inaccessible home	44.8%	55.2%	100%	67

High support needs		Limiting	Enabling	Total	Count
Study in secondary, tertiary, or continuing education	Accessible home	13.5%	86.5%	100%	89
	Inaccessible home	58.3%	41.7%	100%	192
Have paid employment	Accessible home	11.4%	88.6%	100%	88
	Inaccessible home	62.5%	37.5%	100%	208
Do volunteer work	Accessible home	8.0%	92.0%	100%	88
	Inaccessible home	57.9%	42.1%	100%	197

Over a third of all survey respondents reported lack of accessible housing has resulted in loss of job opportunities, loss of existing work, reduction in work hours, or reduced productivity at work (Table 11).

Table 11: Has a lack of accessible housing ever...

	Count	%*
Prevented you taking a job?	160	48.9%
Reduced your hours of work?	168	51.4%
Reduced your productivity at work?	194	59.3%
Led to losing or giving up a job?	120	36.7%
Total	327	34.4%

* of 948 respondents with sufficient data

Qualitative and quantitative data suggested housing accessibility reduces productivity and work opportunity for people with mobility restrictions in four primary ways.

First, limitations or enablers to work or study from home influenced both employment opportunities and work productivity for those in employment. Survey respondents with both low (40.4%) and high (53.4%) support needs living in inaccessible homes, reported housing design features limiting their ability to work or study from home (table 12). In contrast, those who were able to create modified workstations in their home had significantly improved work opportunities and productivity (see for example box 4, Jack’s story). Qualitative data suggested limitations working from home have become especially restricting during

COVID19 lockdowns and the requirement to work or study remotely. However, some participants have been working primarily from home even before the pandemic.

Table 12: To what extent does the design of your home enable or limit your ability to work or study from home

	Low support needs			High support needs		
	Accessible home	Inaccessible home	Total	Accessible home	Inaccessible home	Total
Work or study from home	8.3%	40.4%	31.9%	14.0%	53.4%	41.2%

Second, many survey respondents and interview participants reported difficulties finding accessible homes close to employment opportunities. Those who have lived in accessible homes – often after significant investment in home modifications – were reluctant to leave their home for a job opportunity.

Third, fatigue from living in inaccessible home and the additional time and energy spent on self-care and homecare, reduces productivity, motivation, self-confidence, and capacity to work, study or volunteer. For example, difficulty showering because of an inaccessible bathroom limits capacity to take on any work outside the house (see box 7, Edna’s story).

Forth, inaccessible housing increased reliance on paid or unpaid support with personal and domestic activities, limiting ability to take on employment, for example due to reliance on assistance in preparation in the morning. Those living in accessible homes reported independence in everyday activities, such as self-care, which also provided greater capacity to take on work or study outside their home (Table 13).

The productivity of informal carers of people with mobility restrictions living in inaccessible homes is also harmed. Several participants commented on the burden of care placed on relatives – especially parents and partners – including impact on their ability to work. Some participants who were able to move into more accessible homes commented this has had enabled their informal carers to take on more paid work.

Table 13: Survey respondents' comments on housing accessibility impacts of work and study

Inaccessible housing	Accessible housing
<i>Working from home</i>	
Limited facilities to provide room for study materials, laptop etc. Study room not modified in any way. [Neither] ADHC nor NDIS are willing to subsidise modification to my desk area nor study area itself. I have owned and lived in my house for some 20 years, which was purchased and (partially) modified soon after my spinal cord injury (T6 complete paraplegia). I do hold a permanent part-time job and have done over this period. Until 2020, this had little detrimental effect on my working life. However, with the COVID pandemic, I have found that my house (in terms of appropriate desk and more particularly "physical space") is NOT meeting my needs and is limiting my work productivity. I have a micro business and the lack of space to do my sewing, so it means I have to go to different places to work. Loss around 15 hours a week	Accessible housing mean I can work or study whenever I want. Accessibility makes it possible. Cannot consider moving without considering modifying a house I certainly was unable to attend work or study as because the house was inaccessible, I wasn't even able to return home let alone return to work or study. We had to move to another town and purchase a home. The home needed a lot of modifications and once this was all done, I was just then able to return to study.
Working from home during COVID has been ...difficult because of lack of space for an ergonomic accessible work desk.	Working from home has been a dream Having my modified apartment enabled me to return to work full time, despite my injury.
<i>Time and energy available for work</i>	
Time and energy spent getting prepared for work can take an overall toll on energy left to get to/from work and around the workplace. When the house is inaccessible time it takes to access the shower and toilet prevented me from taking on paid employment. Suitable private rental housing was much further away from work/study so lost 2 hours a week to travel time. Energy required to live/clean/cook/shower in rental housing that didn't meet my access needs meant I decided to work part time (4 days a week). So, I lost 1 day a week wages + associated superannuation, leave entitlements + missed promotion opportunities at work due to being part time employee. Accessibility directly affects my physical emotional and mental wellbeing and health. Bad design means extra effort which means less capacity for work or study. Bad design means social isolation, and poor mental health. Good access means equity if enjoyment of space and relationships. My apartment has incredibly limiting space in the bathroom in particular, and this has meant that I have been late for things, especially when work was still in an office. The space between the wall, my wheelchair and the bed is narrow. My closet is largely inaccessible. Getting ready for anything, but work especially, takes a long time. The energy which navigating these stairs takes is something which I have to factor into every day... That is not even considering the energy needed to cook dinner or perform other typical household chores once I get inside	A quiet environment at home, e.g. thick walls, supports my hyperacusis. [Otherwise], high temperatures (due to poor shading on windows) worsen my body's heat regulation and therefore drain my limited energy. I have a home that makes life easy for me, so I am able to think and plan for things outside the home. Also, I can come home to a place that renews me. Ease of living at home and entering/exiting home improves energy levels to be able to maintain employment If our home was not accessible it would severely limit social, mental and creative wellbeing which would impact on ability to sleep/et/bathe suitably and therefore be in a positive way able to attend waged work and thereby contribute to paying taxes. Without somewhere to shower or sleep, good *** luck trying to hold down a job or focus on other things I could be more independent and focus time and energy on family and work instead of worrying how I get around my house.

after work. This takes a significant toll on the extent to which I can be productive during the workday.

Independence

Being unable to shower or dress myself has caused issues on keeping my employment	If my home was not accessible, I would rely heavily on others for assistance, therefore limiting my ability to work or study
When I lived in a rental that had a step at the front door I really needed other people to always be able to be there to get in and out of the house which meant there were times I couldn't leave the house so I couldn't work	My accessible home enables me to live independently and safely on my own.
I find it hard to lock and open the front door	Living in an accessible home means I'm able to come and go freely without having to wait on others to assist me
Difficult moving in house doorways narrow no safe access into/out of house.	If I did not have safe, secure, accessible housing I would not be a PhD or a senior public servant. My study and career over 30 years depended on it.
It takes a significant amount of time to get prepared to leave the home with required assistance to bathe due to the design of the bathroom. I would not require assistance if the bathroom had been designed with an accessible thought process	Gaining entry and exit of house enables me to participate in full-time work and occasionally socialise

Accessible housing close to work

I chose a house that was accessible but when work relocated the drive was quite far. Expensive by taxi but to find another accessible house precluded a desire to move closer to work.	It is sheer luck that I found a ground floor Villa. Now they are all high-rise apartments. I only want to live on ground floor due to access and safety concerns. If I didn't find this home close to public transport, I may not have been able to work as taxi fares are too expensive (compared to bus/train)
Due to a lack of even minimal accessible housing I have had to spend all my disposable income travelling to work in a taxi because no accommodation was closer.	If I did not have a fully wheelchair accessible home in a location of my choosing I would have had huge difficulty finding a job, keeping a job due to the fact it takes me a long time to get ready in the mornings and need to be close to my place of work.
Location of houses a long distance away from work, therefore taking 3 hours get ready for work, 1 hour for travel so I need to live closer to the city where my work is. Not enough property close to work.	
Having limited accessible housing available means it is not easy to find a suitable living arrangement that is close to work, which causes me to have to travel long distances to my parent's home, limiting the number of hours I can work each week.	
I found it hard to find housing without stairs very limited as I have had a few falls from being unsteady on my feet. Spent over two months not being able to work while looking for accommodation.	
I couldn't take internships that would have been excellent because all rental housing was either luxury or inaccessible.	

Jack's story

Jack, in his 40s, lives in Sydney. He works part-time for government, studies part-time, and is an active volunteer in disability advocacy. As a result of a spinal injury twelve years ago, Jack has no feeling from the neck down, and no capacity to use his arms and legs. He uses a motorised wheelchair and uses his head to drive the chair and activate other equipment. Since 2010, Jack lives in a group home with three other residents. The house has been purpose-built for people with spinal injuries and is therefore fully accessible.

Each resident has their own bedroom and ensuite. Accessibility features include wide doors and hallways and large living spaces that provide ample room for wheelchairs. The front door has a scanner to allow easy entry. Jack's ability to use assistive technology within his home has reduced his need for paid support. In addition, the house is very centrally located providing easy access to footpaths, transport, shops, amenities, and specialist health services.

Despite its accessibility, living in a group home is challenging. Jack noted the bland, sterile atmosphere of the house that does not feel homely. Another key challenge relates to working from home. Jack notes that unlike an able-bodied person who can just open their laptop in the kitchen, for him, working from home requires an elaborate set-up. He needs a high, adjustable table, multiple computer screens, a microphone for dictation, and adequate space for his wheelchair. As his bedroom is too small, he has set this up in a shared room at the front of the house. On the one hand, working and studying remotely from his accessible workstation at home during COVID19 has allowed Jack to be more productive. On the other hand, he is worried about the impact his work in a shared space has on his flat mates.

Jack has been approved for NDIS Specialist Disability Accommodation and has begun looking into options to live on his own. One of the challenges to finding a suitable SDA home is that those available have been too far from his workplace. Because it takes Jack three hours to get ready in the morning, he cannot afford to lose additional time traveling to work.

Jack's experience has also allowed him to appreciate the ways in which accessible design creates opportunity, as he eloquently articulated:

"I always look at design, not only for the visual things, but also for the hidden things that it brings out and encourages people to do things. We look at design and think oh yeah, just get him through a door. But no, get him through a door to get to work, to get on the train. That's what the right door does, it provides an opportunity. It's all about opportunities. And that's what design does."

"You've got to have a house that helps you produce, helps you participate. Having a house like this, it's like an encouragement. It encouraged me to participate. I get up in the morning and I go: jeez, I can get out the door. And then I went down the road and I volunteered for my Council because I was able to have a good shower, get in my chair, out the door. It induces me to be productive in the community. That's what this house did."

1.6. Need for paid or unpaid support

Inaccessible housing increased need for both paid and unpaid support by most (65.8-67.1%) survey respondents with high support needs. Just over half (51.2%) of respondents with low support needs living in inaccessible housing reported an increase in need for informal care, and 42.0% of those reported an increase in paid disability support. Roughly a quarter (23.0-27.8%) of respondents with high support needs, and a fifth (20.0-18.8%) of those with low support needs living in accessible or modified homes reported a decrease in their support needs thanks to accessible design (Table 14).

Table 14: To what extent does the design of your current home affect your need for paid disability support or informal care?

High support needs		Increased	Neither	Decreased	Total	Count
Accessible home	My need for paid disability support has...	31.1%	46.0%	23.0%	100%	161
	My need for informal care has...	24.7%	47.5%	27.8%	100%	158
Inaccessible home	My need for paid disability support has...	65.8%	28.4%	5.9%	100%	409
	My need for informal care has...	67.1%	27.7%	5.2%	100%	404

Low support needs		Increased	Neither	Decreased	Total	Count
Accessible home	My need for paid disability support has...	26.7%	53.3%	20.0%	100%	45
	My need for informal care has...	22.9%	58.3%	18.8%	100%	48
Inaccessible home	My need for paid disability support has...	42.0%	54.0%	4.0%	100%	176
	My need for informal care has...	51.2%	43.5%	5.3%	100%	170

Qualitative data from the survey and interviews indicated the ways in which inaccessible housing increases support needs, and how accessible housing might reduce these. Participants reported spending high proportions of their NDIS support funding on support for self-care activities they could have done independently in more accessible homes (see box 5, Miriam's story). Beyond the public costs of increased reliance on paid support, the survey and interview pointed to additional social and health costs borne by those living with a disability in inaccessible homes, including negative impacts on relationships with relatives providing informal care; impact on employment opportunities (e.g. reliance on availability of support to be able to get organised in the morning for work); and reduced sense of independence.

Miriam's story

Miriam, in her 40s, lives on her own in a social housing unit in Melbourne. She is a Paralympic athlete, but she has been unemployed since March. She has had Epilepsy and cerebral palsy since birth, and as a result has trouble walking and occasionally uses a wheelchair, a mobility scooter, or crutches. She used to receive support from the NDIS but now, due to COVID19, she cannot engage workers.

Although she previously lived in a social housing unit that was accessible, she was transferred to the current unit which is not. There are two steps in the entry, and there is not enough space to build a ramp. The unit's shower is over a bathtub, which she cannot safely use without support. The only modification she organised was adding handrails.

This inaccessible feature increases her need for paid support, and effectively drains her full NDIS funding package:

"On the topic of NDIS: because my housing is inaccessible I have basically 25000 a year funding purely to supervise me [while] showering, which would be completely unnecessary if I had an actual accessible bathroom. It is completely bonkers".

Miriam notes it would have been cheaper for the NDIS to pay the difference in rent if she had moved into an accessible private rental unit, compared to the cost of paid support resulting from housing inaccessibility. Being dependent on support workers to shower is limiting in many ways, and Miriam highlights the risk of exposure to staff coming in during a pandemic.

Miriam complained about this situation to the Office of Housing but heard in response that they will not modify the bathroom and that there is no other unit she could be transfer to. Because of how poorly accessible her current home is, her isolation has increased. She has less energy to go out. Miriam explained that most of her energy is spent compensating for inaccessible home design, when she could be using that energy for improving herself, taking care of her personal appearance, and increasing her self-confidence.

1.7. Social and family relations

The majority (80.8%) of survey respondents agreed or strongly agreed with the statement ‘I cannot visit friends and relatives whose homes are inaccessible’. People with high support needs were more likely to agree with the statement (86.5%) than those with low support needs (66.2%) (Table 15). The level of agreement (‘strongly agree’ as opposed to ‘somewhat agree’) was also substantially stronger for people with high support needs. This finding highlights the limits of home modifications in producing a built environment that provides inclusion for people with mobility restrictions, as even those with accessible homes remain socially isolated due to limits on visiting others.

Table 15: To what extent do you agree or disagree with the statement “I can’t visit friends and relatives whose homes are inaccessible”

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree	Count	Agree (total)	Disagree (total)
Low support needs	29.9%	36.3%	18.4%	10.3%	5.1%	234	66.2%	15.4%
High support needs	63.7%	22.8%	5.9%	5.2%	2.4%	593	86.5%	7.6%
Total	54.2%	26.6%	9.4%	6.7%	3.1%	827	80.8%	9.8%

Hundreds of survey respondents added written comments on how being restricted from visiting loved relatives and friends impacts their sense of inclusion, health, and dignity (Table 16).

Table 16: Selected comments on difficulty visiting friends and relatives

I’m unable to enter any of the homes of friends or families. The only way I can engage with my 92-year-old mother is either by phone or by meeting her at a cafe somewhere.
Very simple: the only people I can visit are other physically disabled people who live in accessible homes. This means I can’t visit family and friends, who stop inviting me to their homes (pre COVID) and often ends up in lack of inclusion in most social activities outside the home. If I’m out of sight, I’m out of mind.
I cannot visit anyone that is in an inaccessible house. I miss out on being with family and friends and they meet without me or we all do not get together. My social and family life is significantly impaired by lack of accessible buildings every day.
It has a profound effect on friendships in particular as my family make the effort to see me despite their homes being inaccessible. I have lost touch with friends due to their houses being inaccessible - I have had to turn down invitations due to inaccessibility, and the embarrassment of their houses not being accessible means I don’t get invited any more.
Unable to visit children in two story houses.
I am a hermit! I communicate with the outside world via computer. Occasionally friends drop by, but rarely.
I feel sad and sometimes depressed that I just can’t visit people I love as I can’t get into their house.
I have one child, who is married with a child... to see my granddaughter... far less often than I wish... causes me great pain and misery, envying friends and neighbours who spend a lot of time with their grandchildren, and can choose to drop in on them, offer to babysit, take them out, etc I feel that my later years of life will remain emotionally barren and both my grandchild and I will miss out on so much.
I can’t visit my family... I miss out on building a relationship with my nieces because I can’t access their house... I don’t really have a close relationship with them at all and I feel like, to some extent... I feel like I’ve been a bit frozen out at times. So, it’s really important that it’s not just my home that needs to be accessible. It needs to be other people’s homes.

Beyond the difficulty of visiting friends and relatives in their own homes, survey respondents and interviewees noted other impacts inaccessible housing has on their social and family relations. Many noted the struggle of living in inaccessible homes leaves them devoid of energy, and with injured self-confidence and mental health, impacting their ability to socialise. Many have also commented that inaccessible housing creates increased reliance on others – especially parents and partners – for support with everyday tasks, and the burden of care can severely strain relationships. Restricted housing options due to housing inaccessibility (see section 3.7) also isolates people with mobility restrictions from their family and social networks, including barriers to living together with an intimate partner (see box 6, Kelly’s story).

Having an accessible home thus can relieve some of the pressures on social and family lives, by reducing reliance on family for support with everyday domestic tasks; freeing up energy previously spent on negotiating inaccessible homes for socialising; improving self-confidence to socialise; and creating a space where friends and family both with and without disability can visit (Table 17)

Table 17: Impact of inaccessible housing on social and family relations

Inaccessible housing	Accessible housing
<i>Lack of energy, injured self-confidence, and mental health pressures due to inaccessible housing makes it difficult to maintain relationships</i>	
The less accessible my house is, the more energy it takes for me to do the most basic things, leaving no energy left for social relationships or a life in general.	[social life improved] Immensely! Good access means good self-worth, self-capacity, independence and, self-motivation, energy for life rather than struggling for day to day tasks.
Living in inaccessible housing has negatively affected my wellbeing and mood, so I didn’t have energy to have friends and family over	Without accessible housing I would not have the freedom of movement or energy to care for my children
<i>Living in inaccessible housing increases the care burden on family and friends, straining relationships</i>	
Struggle to maintain relationships due to accessibility issues or lack of accessibility, entirely. Too much strain on other person to do tasks that I otherwise am fully capable of doing, had there been minor adjustments. Leads to “carers” having resentment and leaves Self vulnerable to neglect and abuse.	When living with my parents I couldn't always have friends at home but now in my own fully accessible house and without my parents (24/7 Support workers instead) I can have friends over or I can go out to social events my parents couldn't take me to. Now my parents can be Mum & Dad not my carers.
The less accessible my house is the more I depend on my family for help, which definitely hinders our relationships on multiple levels.	Having an accessible home enables me to independently assist around the home, decreasing my reliance upon others to assist me, thereby improving my relationship with my wife and children.
<i>Having an accessible home makes it easy to be visited by friends and family</i>	
My elderly parent and my sister cannot visit due to the stairs, as they both have bad backs. My mother also has problems with her hips.	Having an accessible bathroom on the entry level means that my friends with mobility impairments can visit me.
I have many friends in wheelchairs who cannot visit my home. We have to pay for venues if we want to do an activity, which usually means we don't do them.	We built this house specifically for access and have a brilliant toilet design which means, two friends with wheelchairs can visit for a long time (pre COVID19) as they are able to use our toilet

The pain of not being able to visit family and friends in their homes was equally shared by research participants who lived in accessible homes, and those who did not. However, those who lived in accessible homes had greater capacity to host friends and family in their home. Those living in inaccessible housing – low and high support needs alike – were more likely to agree with the statement “Friends and family can’t visit me because my home is inaccessible” (Table 18). Qualitative data suggested many people who have friends or relatives with a disability, and thus the inaccessibility of their home is a barrier to having friends over. One participant commented: ““it is disappointing that my friends with disabilities can’t come

over to my house because it is inaccessible. It disconnects me from my community, my disability community”.

Table 18: To what extent do you agree or disagree with the statement “Friends and family can’t visit me because my home is inaccessible”

	Agree (total)	Disagree (total)
Accessible housing	8.7%	78.8%
Inaccessible housing	32.3%	44.3%
Total	26.2%	53.2%

Box 6: Housing accessibility and social and family relationships

Kelly’s story

Kelly, in her 40s, is a mental health professional. She was born with spina bifida and has severe scoliosis, and uses a manual wheelchair since she is not able to stand or walk.

Kelly rents a detached social housing unit, in which she has been living on her own for close to 20 years. The unit was built to standard accessibility specifications. However, some features of the house do not meet her personal needs, including the laundry trough and kitchen shelves that are too high, and insufficient space to comfortably maneuver her wheelchair, especially in the bathroom. Nevertheless, Kelly says the house is good enough for her to get around to do what she needs to do.

Her main concerns relate not the accessibility of her own home, rather those of her family and friends. Kelly is a very social person, but access barriers significantly restrict her from spending time with her family and friends. She cannot visit her friends at their inaccessible homes without assistance to be able to move around and use their toilets. She commented:

“... we are no longer stuck in institutions, but we are stuck at home because of poor design.”

Her father recently contracted builders to construct a new home that was supposed to be fully accessible, yet his plans were met with pushback from the builders who rejected critical accessible design features he asked for. This was extremely disappointing for Kelly who had been eagerly looking forward to finally be able to gather with her extended family in her father’s home. Kelly is convinced this would not have happened if minimum accessibility standards were included in the building code.

Housing accessibility also impacted her long-term intimate relationship with an able-bodied partner of 20 years. They have not been able to move in together due to the difficulty finding housing that is designed for an inter-abled couple. For example, her kitchen bench has been lowered to meet her needs but would be uncomfortable for her partner to use. The unit is also too small, and with another person around it would be difficult for her to move around.

1.8. Health and risk of injury

Housing accessibility or inaccessibility has significant impact on self-reported mental health and wellbeing. 60.0-60.1% of respondents living in accessible housing reported improved mental health and wellbeing, thanks to the accessibility of their home. In contrast, 71.7% of people with high support needs, and 50.0% of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing (Table 19).

Table 19: To what extent has the accessibility standard of your current home - and ability to get in and around the home - affected your mental health and wellbeing?

		Worsened	No Impact	Improved	Total	Count
Low support needs	Accessible home	15.6%	24.4%	60.0%	100%	45
	Inaccessible home	50.0%	34.7%	15.3%	100%	176
High support needs	Accessible home	16.6%	23.3%	60.1%	100%	163
	Inaccessible home	71.7%	16.2%	12.1%	100%	414

Worsened mental health was a consequence or culmination of the various impacts discussed in other sections:

- fatigue caused by spending more time and effort completing everyday self-care and home-care chores due to inaccessible housing features (especially stairs, and inaccessible bathrooms and kitchens)
- social isolation due to difficulty socialising with friends and family
- strained relations with family members providing additional informal care due to inaccessible housing
- anxiety about risks posed by inaccessible housing, including risk of injury (table 20), being forced to move into a nursing home or other residence; or being unable to escape the house in the event of fire or another emergency. Such anxieties were reinforced by past traumatic experiences of injury. Some participants who moved out of shared supported accommodation noted experiences of abuse in such settings, increasing their current anxiety of being forced to move back to shared accommodation due to accessibility constraints in their own home.
- reduced self-confidence and sense of self-worth due to increased dependence on formal and informal support for everyday chores (table 21)

Inaccessible housing design also posed physical health hazards, and many participants reported repeated injuries in their homes (see boxes 7 and 8, Edna's and Ian's stories). Most survey respondents (75.9% of those with low support needs, and 83.6% of those with high support needs) living in inaccessible homes reported concern about the risk of injury in their home, compared to only 36.4%/32.1% of those living in accessible homes. The level of concern reported ('very concerned' as opposed to 'somewhat concerned') was substantially higher for people with high support needs.

Table 20: How concerned are you about risk of injury because of difficulty getting in and around your home related to the accessibility of your home?

	Housing	Very Concerned	Somewhat concerned	Concerned (total)	Not Concerned	Total	N
Low support needs	Accessible home	13.6%	22.7%	36.4%	63.6%	100%	44
	Inaccessible home	22.4%	53.4%	75.9%	24.1%	100%	17
High support needs	Accessible home	16.0%	16.0%	32.1%	67.9%	100%	15
	Inaccessible home	49.9%	33.7%	83.6%	16.4%	100%	40

One participant interviewed commented that the health impacts of inaccessible homes are often overlooked by health professionals, or are inadequately addressed through medical interventions rather than design interventions, because of the nature of clinical assessments:

“So often people who are seen in the medical sector, are only seen in their clinical situation, or their surgery, they are not seen in their home, but when you actually go to somebody’s house and see what the access is like within it, it has huge implications on how they live and how they get around. And a lot of people don’t understand that’s the barrier, and that it can be removed, you know?”

Table 21: Selected quotes on mental health impacts of accessible and inaccessible homes

Mental health deterioration in inaccessible homes	Mental health improvement in accessible homes
<i>Social isolation / belonging</i>	
It is very depressing to not be able to go out easily, or have friends visit because my house is inaccessible. It makes me feel very isolated and alone.	We have a home that is easily accessed by anyone, so visits by other people with disabilities are easy, and they find that rare.
I feel isolated, because it takes so much energy and effort to get in and out of my home. ... I feel hopeless sometimes because housing accessibility is probably my biggest barrier to achieving independence, but I'll never get there if houses aren't built with disabled people in mind.	The fact that my apartment is accessible, improved my mental health tremendously! I feel included in the community. I can go anywhere, invite my friends, etc.
Not being able to fully access my friend's homes and have them access my homes has had a huge impact on my mental health. It feels like it is my fault for not being able to find an accessible place. I also feel disempowered because when my health is bad, I have to ask friends and family for help because my own home is not fully accessible.	Because I was able to easily modify my existing family home, I have been able to remain at home with my young family despite my increasingly poor mobility. This has given my life meaning. We also welcome family and friends to our house... Without the modifications to our own home I would have been forced to move to a nursing home because of my high needs.
Access to my shower and toilet isn't easy and it's hard as my partner needs to help me shower. This often makes me procrastinate showering/self-care etc as showering already makes me unwell and fatigued as it is which then makes me feel horrible and gross.	Means I can live a near to normal life and have time with my baby daughter.
It has dehumanised me to the point that I have become a recluse and am suicidal.	It has allowed me to have showers with an attendant rather than just sponge baths, so has made me feel cleaner.
<i>Anxiety / Security</i>	
My greatest fear is becoming homeless due to the inaccessibility of housing. It has led to suicidal thoughts.	Happy, knowing I have future options that can be used to allow me to stay in my home longer if my condition deteriorates.
If I can open the front door I won't burn to death... it is really frightening. That one modification would be fantastic. I would really like to be able to get out of the front door.	It is an enormous relief to live in an accessible house and I know that as my condition is most likely to worsen, I am still secure here in my home with my husband.
I'm not confident in my ability to stop myself falling it's made me fearful and reclusive.	Having a house of my own that is modified to meet all my accessibility needs has given me a feeling of stability and confidence for my future that I have never felt since I acquired my disability 24 years ago... knowing that my everyday life is so much easier, my physical needs are met and this will be my home for the rest of my life.
When my ability to move around my house is hampered by low accessibility; It usually leaves me in more pain and being less productive, which makes me anxious, and makes my depression worse.	If I can move easily around my home and attend to all my daily living requirements, like everyone else can, I feel more relaxed, independent, and resilient.
I worry now that I won't get better or more mobile so will I be able to keep living at home? Going into aged care terrifies me, especially now with the pandemic.	I feel grateful every day that I now live in a purpose built fully accessible home of my own. I feel safer, more secure, it has led me to feeling free and liberated.
Bathing and self-care is traumatic and upsetting with physical risk which is stressful and makes me anxious and upset leading to self-harm.	Because I am lucky to live in an accessible home with my daughter, I am actually more mobile which has helped improve my independence which has been wonderful for my mental health. Also, the fact that I don't live with the constant fear of falling.
<i>Withering / Flourishing</i>	
The less accessible my house is, the more I am reliant on carers and loved ones, which has a huge impact on my mental health and wellbeing. I highly value my independence.	I am more in control of my life and that means everything.

Mental health deterioration in inaccessible homes	Mental health improvement in accessible homes
I've felt stuck and limited by my home. I get frightened by the insular nature of staying home. Unsettled sleep I find I get headaches stress and anxieties.	Being able to enter and exit my home, and shower independently, has improved my sense of self-worth.
I used to have a passion for cooking and can't, nor to do my study or hobbies, I have become more depressed as I feel the environment has taken me from rather independent to fully dependant beyond need, general apathy and frustration.	My current house is very accessible and located near town and activities I enjoy.
Not being able to turn on taps results in me crying every day.	Living in an accessible home means I'm able to do more things independently which has a positive impact on mental health. I don't feel like a burden anymore.
I look at the steps to my front door from my wheelchair and I am defeated. There is no way around it and you can't sugar-coat it.	It feels wonderful to be able to enter and leave my home independently without assistance. This is something everybody should be able to do.
<i>Sense of home</i>	
It just feels awful. It feels like I'm fighting the space that's supposed to be a sanctuary for me.	We adapted this house to serve us in this period of our lives. is very comfortable so we are content.
It is extremely depressing to be incapacitated by the limitations of your own house. To own rooms you cannot go into, to not be able to exit from all areas, to not be able to access the backyard. To not be able to get a drink from the fridge or use the stove.	I can't imagine living in a house where you haven't seen every inch of the house you live in. Having a house that allows me to get to every part of it means I am included in every part of day to day life.
Not being able to access all of my garden, watching my lawns get full of weeds and overgrown. Unable to reach areas in my house to clean, frightened of falling in my shower... Not being able to get to the pantry because the doors open outwards and block access. I don't know what is in the pantry until someone comes and I can ask them. I cannot access furniture in bedroom because I am in a wheelchair. I don't know what is in them anymore... I find the whole situation very depressing.	Having an accessible house makes even my worst days not as bad as I can still function around the house without any issue or frustration.
My home is supposed to be my space and yet even here I can't do basic things. It weighs hard on your heart.	I was very happy when I moved into my home because everything from showering to watering my garden was so easy... I had not been able to water a garden for 20 years.

Edna' story

Edna is a self-employed professional working from home – a private rental unit - on a casual basis. She's lived with muscular dystrophy for her entire life. It is a progressive disease that has become more debilitating over time. When Edna moved into the unit, she was still able to walk, and the unit seemed to meet her needs at that time. However, within fifteen months an injury in her home led to her losing the ability to stand and walk. She was pulling a trolley carrying her meal over a slight step, lost her balance and fell. This accident could have been prevented if there had been a step-free threshold. The unit is poorly designed to meet her current needs and abilities, significantly enhancing her need for paid support funded by the NDIS. More so, Edna is anxious about the risk of another injury at home.

Edna worries that if she were to fall within the cramped conditions of her shower and toilet, she might seriously injure herself or become stuck and unable to ask for help. She is also worried that the set up in her home could lead to her support workers being injured. For example, while Edna's unit has two bathrooms, both are too small to accommodate the mobility aids that she requires. Entering and exiting without a rolling chair demands too much effort and is so time consuming and exhausting that she skips showering when she needs to go out in the morning. This gives rise to anxiety about her hygiene and odor throughout the entire day and restricts her ability to work outside her home.

Her ensuite bathroom has been set up for toilet use, however as there is inadequate space for her toilet transfer bench, she has to reverse on her wheelchair out of the bathroom, often hitting the door on her way out. These safety hazards due to the cramped conditions and lack of accessibility features prey on her mind: if she falls, she could get stuck without no one to assist.

Edna's housing choices are highly restricted. Many of the design problems in her home are structural in nature and thus not easily modifiable, especially given that this is a private rental unit. She cannot afford to buy her own home, even with the assistance of family members who are willing to contribute. She cannot return to her parents' home - while they had thought that they were building her an accessible home, now that she is in a wheelchair, this is no longer the case. Edna has been approved to move into Specialist Disability Accommodation (SDA) but has many concerns about this transition, particularly around lack of choice over housemates, being forced to move further away from her family, a perceived loss of freedom and autonomy as well as health concerns relating to group living during a pandemic. Edna has already spent three months in a transitional nursing home and describes a lingering feeling of being "fenced in".

Edna describes her home as a prison and points out the kinds of restrictions many Australians experienced for the first time during COVID19 lockdowns, for her are just an ordinary routine:

"I came home and there were months at a time when I was stuck at home. I couldn't go to my friends' place because I couldn't use their toilets, or I couldn't get in the door or whatever it was. All I could see out the backyard at that time was a dead garden and a fence and no view to the outside world and that was really isolating. And people would say, 'I'll come around and visit you.' It didn't make any impact on my mental health because I still had that same feeling when I came home that my home was a prison and not a home. So, the joy of moving out and being by myself and getting my own space just disappeared after that experience. And I felt like it was a prison. This lockdown is not my first rodeo. I've built resilience prior to this."

Ian's story

Ian is a retired homeowner and has lived with his partner and his two sons in a freestanding house in Melbourne for twenty years. He has paraplegia due to a spinal cord injury that occurred 35 years ago. He uses a manual wheelchair for his daily activities.

He has been able to modify his current home to meet his accessibility needs, at a cost of approximately 28,000 AUD funded by insurance compensation. He fully renovated the bathroom with a flat entry for the wheelchair, a rolling shower chair, and reinforced floor and walls to support the hoist and handrails. He has also installed ramps in the front and back door and widened a few doorways. The modification that most reduced his need for assistance from others was an overhead hoist that allows him to go into bed without help despite his arms and shoulder muscles' deterioration. Nevertheless, he still needs assistance transferring into a seat, accessing the shower, for dressing and undressing.

Before the modifications of his home, Ian broke his leg several times from falls when transferring to a seat, but thanks to the modifications he is no longer concerned about such injuries. However, he expects his sons to move out of the house, and the need to relocate with his wife to a smaller home, which might require further investment in home modifications.

1.9. Housing choice: Ability to stay or move home

The shortage in accessible housing limits housing choice for people with mobility restrictions in two ways: firstly, by increasing the risk of forced moves due to the inaccessibility of their own homes; and secondly, by limiting the range of housing options they can choose from should they move home on their own volition.

Participants living in inaccessible homes were more likely to express concern about the risk of being forced to move to another residence (68.0% of those with high support needs, and 55.7% of those with low support needs), or to a nursing home (58.9% and 45.0% respectively). This compares with a minority of people living in accessible homes who reported similar concerns, demonstrating that accessible home significantly reduces such risks (Table 22).

Table 22: How concerned are you about the following impacts related to the accessibility of your home?

Low support needs	Housing	Very Concerned	Somewhat concerned	Concerned (total)	Not Concerned	Total	N
Being forced to move to another residence because of difficulty getting around your home	Accessible housing	13.6%	20.5%	34.1%	65.9%	100%	44
	Inaccessible housing	29.5%	26.1%	55.7%	44.3%	100%	176
Being forced to move to a nursing home because of difficulty getting around your home	Accessible housing	18.2%	9.1%	27.3%	72.7%	100%	44
	Inaccessible housing	22.2%	22.8%	45.0%	55.0%	100%	171

High support needs	Housing	Very Concerned	Somewhat concerned	Concerned (total)	Not Concerned	Total	N
Being forced to move to another residence because of difficulty getting around your home	Accessible housing	14.5%	10.1%	24.5%	75.5%	100%	159
	Inaccessible housing	41.2%	26.9%	68.0%	32.0%	100%	413
Being forced to move to a nursing home because of difficulty getting around your home	Accessible housing	20.1%	8.8%	28.9%	71.1%	100%	159
	Inaccessible housing	36.9%	22.0%	58.9%	41.1%	100%	404

For people with mobility restrictions who do wish to move home, the shortage in accessible housing significantly limits the choices available, especially for those with high support needs. Most (56.6%) people with high support needs living in inaccessible housing wanted to move home but were limited in doing so, reflecting again the detrimental effects of housing inaccessibility. Difficulty finding accessible housing was the most significant barrier to moving home. Nearly half (48.5%) of people with high support needs living in inaccessible homes, and close to a third (31.2%) of those living in accessible homes, reported a desire to move home but being limited by difficulty finding accessible housing elsewhere (Table 23). Private renters were three times as likely to want to move home but be limited because of difficulty finding accessible housing than homeowners (Table 24).

The difficulty finding an accessible home is evident in both Ken's story (box 9) and the quotes below:

"There is not great awareness within the broader community about how little accessible housing is available. I think that there is an expectation that people with a disability... don't have a family or don't have pets or don't have a job and so can live in an apartment by themselves. However, we have families, we have jobs and we have pets and we have a right to have all those things, but that means that we should have housing options that suit us."

“When I went through a property settlement and the court ordered me to sell my accessible house, I was very anxious and quite terrified that I would not find an accessible home with the amount [of time] the court gave me... there was insufficient stock of accessible homes available. It was a terrifying time and caused me great anxiety, depression and sleepless nights.”

Other interview participants and survey respondents pointed out the difficulty to hold on to jobs – or to seek new ones – while searching for an accessible home in a market where these are a rare commodity.

Table 23: Does a difficulty finding accessible housing limit your ability to move home? By support needs

		I would like to move home, but limited because of difficulty finding accessible housing	I would like to move home, but limited for reasons other than accessibility	I am not interested in moving home right now	Total	Count
Low support needs	Accessible housing	11.9%	4.8%	83.3%	100%	42
	Inaccessible housing	23.5%	15.3%	61.2%	100%	170
High support needs	Accessible housing	31.2%	8.4%	60.4%	100%	154
	Inaccessible housing	48.5%	8.1%	43.4%	100%	394

Table 24: Does a difficulty finding accessible housing limit your ability to move home? By tenure

			I would like to move home, but limited because of difficulty finding accessible housing	I would like to move home, but limited for reasons other than accessibility	I am not interested in moving home right now	Total
I own this home	Low level	Accessible housing	10.3%	0.0%	89.7%	100%
		Inaccessible housing	11.7%	8.5%	79.8%	100%
		Total	11.4%	6.5%	82.1%	100%
	Severe level	Accessible housing	18.8%	1.6%	79.7%	100%
		Inaccessible housing	24.6%	6.0%	69.4%	100%
		Total	22.7%	4.5%	72.7%	100%
I rent this home (private rental)	Low level	Accessible housing	0.0%	0.0%	100.0%	100%
		Inaccessible housing	39.5%	18.4%	42.1%	100%
		Total	36.6%	17.1%	46.3%	100%
	Severe level	Accessible housing	33.3%	16.7%	50.0%	100%
		Inaccessible housing	70.1%	9.3%	20.6%	100%
		Total	66.1%	10.1%	23.9%	100%

Box 9: Lack of accessible housing and housing choice

Ken's story

Ken moved out of supported accommodation (group home) after experiencing abuse. To avoid Ken moving into a nursing home – and while waiting on an NDIS decision on SDA funding - his mother searched for a private rental unit where Ken could live. His mobility is very limited. Ken uses an electric wheelchair outside the house and a walking frame inside the house. He needs an accessible home with a fully accessible bathroom and a Hi-Lo bed, in addition to 24/7 support.

The search for an accessible and affordable home in a location that was easily accessible to a pool of support workers, took almost a year, and involved inspections of 32 rental listings. Eventually they found and compromised on a standalone house that was modified to be only partly accessible, with a ramp at the entry into the house and a small partly accessible bathroom. The internal layout means Ken cannot use his electric wheelchair inside the house, and his walker only narrowly fits through the doorways and hallways, leaving only an inch on either side. Ken likes to help with meal preparation, but the kitchen design does not allow him to do that. The bathroom is partly accessible, but there is barely enough room to fit in a shower chair, Ken's incontinence aids or a support worker to safely assist him. Ken's mother invested time and money in small modification to the house, including a ramp in the rear entry to facilitate backyard access. The landlord approved those modifications because they were planning to knockdown and rebuild the house anyway. However, this of course creates uncertainty about the long-term sustainability of Ken's tenancy. In these circumstances the NDIS will not approve funding for further modifications, even if recognized as necessary.

With the outbreak of COVID19, because of difficulty getting support workers to visit his home, as well as his being highly immunocompromised, Ken moved back to live with his mother temporarily. He continues to pay rent on the now vacant property to maintain the lease, since finding an alternative home that meets Ken's accessibility requirements will be again extremely difficult and long.

Trapped in a home that does not meet some of his basic needs, but unable to find alternatives, Ken's mother commented: "A safe home to stay happy and healthy shouldn't be impossible to do."

4. Conclusions

- 1) **Existing strategies such as the voluntary building code, reliance on home modifications or provision of accessible social housing have failed to deliver accessible housing for most people with mobility restrictions. Building all new homes to accessible standard will be the most effective way to address the shortage in accessible housing.**

The existing reliance on voluntary construction of accessible homes, or postconstruction modification of inaccessible homes has not delivered accessible homes for people with limited mobility, leaving most people with mobility restrictions in homes that do not meet their needs. Ability to finance or access funds for home modifications is unequally distributed, and there are major barriers to home modifications in private rental, or in homes with structural physical constraints. Most modifications undertaken only partly address the accessibility needs of people with mobility restrictions. Home modifications do not adequately address changing needs over time. Most importantly, modifications only in the homes of people with mobility restrictions limit their housing choice and increase their social isolation.

CIE⁷ notes provision of accessible social housing as a strategy to improve housing accessibility for people with mobility restrictions, however there is a severe shortfall in social housing; and our study also found the majority of people with mobility restrictions in social housing still live in homes that do not meet their accessibility needs.

- 2) **Inaccessible housing severely harms the dignity, freedom, social inclusion, health and wellbeing of people with mobility restrictions.**

The report presented robust quantitative and qualitative evidence of the harms caused by inaccessible housing.

- 80.8% of survey respondents agreed or strongly agreed with the statement “I can’t visit friends and family whose homes are inaccessible”. The stories behind this statistic are profoundly disturbing: people with mobility limitations unable to visit their elderly parents, losing connection with siblings and close friends; not being invited to family gatherings; missing out on social events; and living ‘hermit’ lives that many participants have described in terms of deep loneliness and isolation.
- 71.7% of people with high support needs, and 50.0% of people with low support needs, living in inaccessible housing reported worsened mental health and wellbeing. The difference accessible housing can make was illustrated starkly in contrasting comments made by two participants. One, living in an inaccessible home vividly described the despair she feels because she is not able to access rooms and the garden in her own home, “watching my lawns get full of weeds and overgrown”. The other woman moved into a new accessible home and expressed the joy of being able to water her garden for the first time in 20 years.
- Participants with high support needs living in inaccessible homes were anxious about the possibility of being forced to move to another residence (68.0%), or to a nursing home (58.9%). One participant said: “My greatest fear is becoming homeless due to the inaccessibility of housing. It has led to suicidal thoughts.” For another participant, having an accessible home meant she was able to remain at home with her young family despite increasing support needs, which otherwise would have forced her to move into a nursing home. The accessibility of her home, and the things it made possible, “has given my life meaning.”
- Nearly half (48.1%) of people with high support needs living in inaccessible homes, and close to a third (30.7%) of those living in accessible homes, reported a desire to move home but being limited by difficulty finding accessible housing elsewhere.

⁷ CIE, 2020, p. 2

Such impacts must not be measured exclusively in dollar value; rather, the social justice argument for addressing the indignities and harms experienced by people with mobility restrictions must be front and centre to the RIS Consultation considerations.

3) CIE's cost-benefit analysis underestimated the economic costs of inaccessible housing, by ignoring impacts on workforce participation of people with mobility limitations; underestimating the impact on paid and unpaid support needs; underestimating the negative impacts on mental health and wellbeing; and, underestimating the extent to which a shortage in accessible housing limits housing mobility.

3a) CIE discounted the impact of inaccessible housing on workforce participation by people with mobility limitations

In estimating the 'size of the problem' and quantifying costs of inaccessible housing, the CIE did not consider impact on workforce participation of people with mobility limitations. Our data shows close to one-third of people with mobility restrictions surveyed reported job losses, missed job opportunities, reduced working hours, or reduced productivity at work.

Excluding those for whom this question was inapplicable (i.e. other reasons preventing paid employment), 96.2% of survey respondents with low support needs, and 88.6% of those with high support needs, living in accessible homes reported their homes were 'enabling' to having paid employment. In contrast, 47.9% of survey respondents with low support needs, and 62.5% of those with high support needs, living in inaccessible homes reported their homes were 'limiting' to having paid employment. As one respondent to the survey stated: "Without somewhere to shower or sleep, good *** luck trying to hold down a job or focus on other things."

Many survey respondents and interview participants reported difficulties finding accessible homes close to employment opportunities. Those who have lived in accessible homes – often after significant investment in home modifications – were reluctant to leave their home for a job opportunity. For those who lived in inaccessible homes, fatigue and the additional time and energy spent on self-care and homecare, reduced motivation, self-confidence, and capacity to work, study or volunteer.

CIE also ignore that the monetary benefits from work can largely be removed because of a lack of accessible housing close to work or public transport. As one respondent stated: "Due to a lack of even minimal accessible housing I have had to spend all my disposable income travelling to work in a taxi because no accommodation was closer."

3b) CIE underestimated the impact of inaccessible housing on support needs.

CIE expressed scepticism as to the relevance of Carnemolla and Bridge's⁸ evidence that housing with accessibility features reduces care needs. The CIE questioned whether the sample investigated by Carnemolla and Bridge is representative of the general population with mobility limitations living in inaccessible housing. It also argued Carnemolla and Bridge's findings relate to home modifications, which are tailored to the specific needs of the recipient and are not always aligned with the proposed universal accessibility standards for new build.

Addressing both CIE concerns, our report presented data on a much larger sample of participants than those examined by Carnemolla and Bridge, and still validates their conclusion, demonstrating that the reduction in support needs associated with accessible housing – including both newly built accessible housing and modified housing – is widely applicable for the general population of people with mobility restrictions.

⁸ Carnemolla, P. and Bridge, C., Housing Design and Community Care: How Home Modifications Reduce Care Needs of Older People and People with Disability, *International Journal of Environmental Research and Public Health*, 2019.

Furthermore, our findings suggest CIE underestimated the range of everyday activities for which paid support is provided⁹, and which can be reduced by accessible housing. The CIE has focused exclusively on paid and unpaid assistance with mobility tasks. In contrast, our analysis shows that inaccessible housing also significantly increases need for assistance with self-care and other domestic activities (Table 9).

In estimating impact on support needs, CIE excluded those living in housing that has already been modified due to disability or age, assuming that modified housing is already accessible (p. 140). However, our analysis shows that most people whose homes have been modified, consider these modifications to address their needs only partly, and they too require additional paid or unpaid support due to inaccessible homes (Tables 4 and 14).

3c) CIE underestimated the impact of inaccessible housing on mental health.

Our findings point to two shortcomings in the way CIE estimated the impact of inaccessible housing on mental health.

Firstly, CIE only measured impacts on mental health as an indirect outcome of loneliness. The evidence in our study demonstrates that living in inaccessible housing is detrimental to mental health in many other ways, including the frustration, fatigue and indignity of not being able to complete everyday tasks of movement, self-care and home-care; being reliant on others for support, and the strain this puts on family relations; the ongoing anxiety associated with fear of injury, forced removal from home, or inability to escape home in the event of fire or another hazard; and an undermined sense of home, security and self-worth (“My home is supposed to be my space and yet even here I can’t do basic things. It weighs hard on your heart.”).

Secondly, CIE underestimated the extent to which inaccessible housing contributes to loneliness and social isolation of people with mobility restrictions. Drawing on SDAC data, CIE¹⁰ commented as follows:

“There were a further 309 000 people who reported avoiding visiting family and friends due to their disability (this excludes the overlap between those that also had difficulty accessing another person’s house). However, it is not clear that they avoided visiting family and friends because their housing was inaccessible or for some other reason related to their disability.”

Our data removes any doubt as to whether inaccessible housing is the primary barrier to visiting family and friends: 80.8% of survey respondents agreed with the statement that they cannot visit friends or family living in inaccessible housing. Comments made in the survey and interviews also confirmed that inaccessibility was the primary reason for not being able to visit friends or family.

3d) CIE underestimated lack of accessible housing impact on residential mobility

CIE¹¹ argued that “even if more accessible dwellings become available, there are a range of factors that suggest that the number of people who would choose to move to a more accessible dwelling would likely be relatively low for owner-occupiers.”

CIE¹² based their analysis on SDAC data on those who have already moved homes and their reasons to do so. However, as acknowledged by CIE, this method discounts those who wish to move but are unable to do so due to lack of accessible housing. Our data presents strong evidence that most people with mobility restrictions living in inaccessible housing wish to move home, and the primary reason they are unable to do so is difficulty finding accessible housing (table 22).

⁹ CIE, 2020, p. 140

¹⁰ p. 157

¹¹ p. 91

¹² p. 146-7

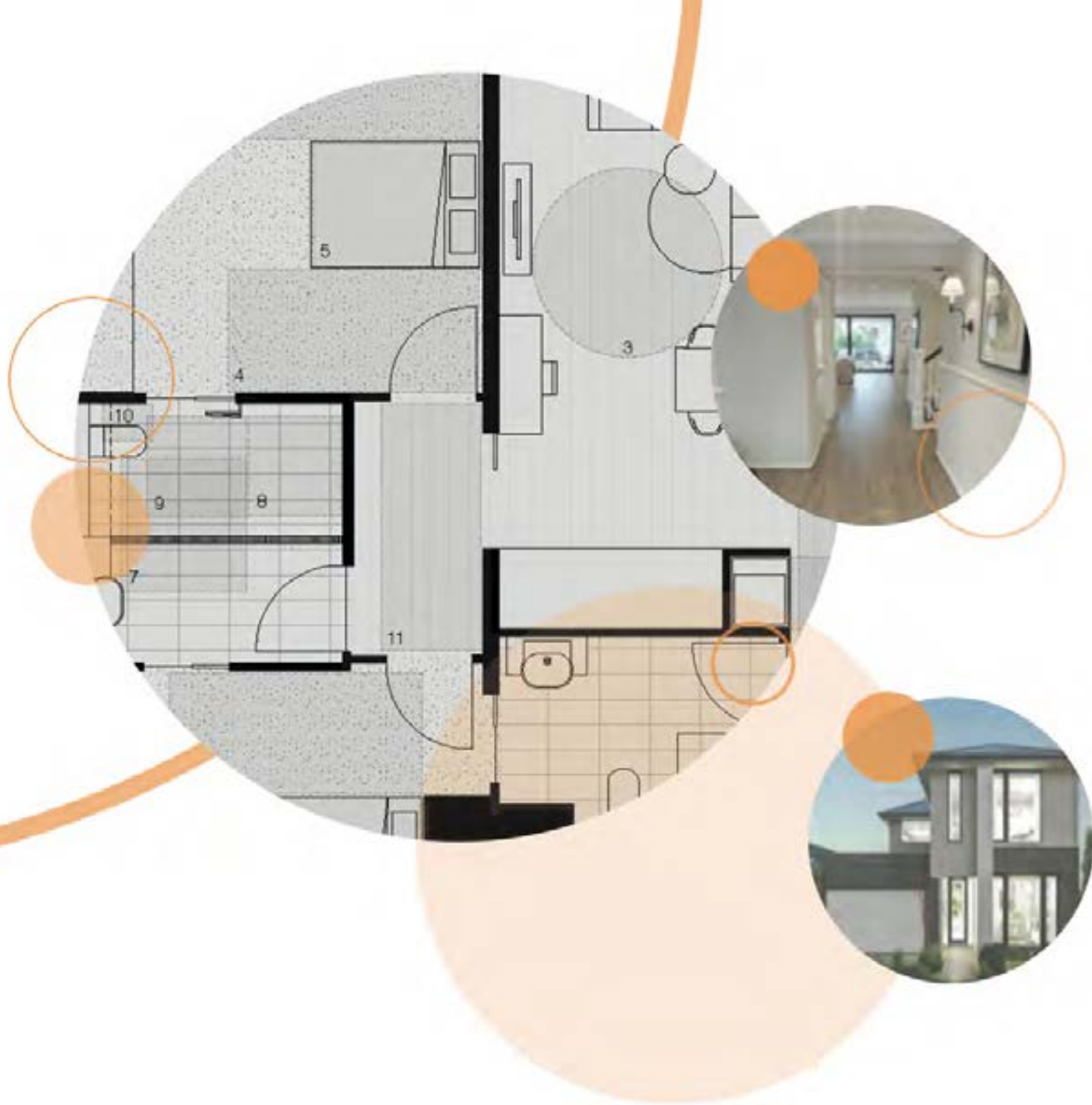
Challenging the CIE assumptions, while desire to move home is stronger among private renters than it is among owner occupiers, 22.7% of homeowners with high support needs would like to move home but are limited because of difficulty finding accessible housing (table 23). This data suggests the ‘sorting’ process that will see new accessible housing stock allocated to people with mobility limitations can be faster than the CIE assumptions, and the associated benefits thus higher.



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Appendix 3

Preliminary findings: audit of accessible features in new build house plans



AUDIT OF ACCESSIBLE FEATURES IN NEW BUILD HOUSE PLANS



SUMMER
FOUNDATION



The Summer Foundation is a not-for-profit organisation, established in 2006, that aims to change human service policy and practice related to young people in nursing homes. Our mission is to create, lead and demonstrate long-term sustainable changes that stop young people from being forced to live in nursing homes because there is nowhere else for them.

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Executive Summary

The Australian Building Codes Board (ABCB) is nearing the end of consultations as part of a nation-wide assessment of options for minimum accessibility standards for housing for potential inclusion in the 2022 National Construction Code (NCC). Housing is social infrastructure that is with us for 30 or 40 years, so it is crucial that it meets the current and future needs of Australians with mobility impairment. This study audited 20 of the most popular house designs from Australia's most active volume home builders. It found that many features of the Silver, Gold and Platinum levels of Livable Housing Australia's (LHA) Livable Housing Design Guidelines are already incorporated into new dwellings produced by these builders. This study demonstrates that where these features are incorporated into house designs, some are above the minimum Silver level, and achieve Gold or Platinum levels. However, these accessibility features are not consistently or systematically incorporated into the new homes. Commonly, these features do not all line up in the one dwelling, which does not enable access by people with a mobility limitation. Given the high take-up of individual elements, and the consistent exceeding of minimum standards for some elements, this study suggests that the cost of accessibility has been factored into current designs to a significant extent already; however, not in a way that guarantees practical accessibility of the dwellings. All 20 of the houses audited included at least 6 of LHA's 15 Design Elements at Silver level, with two houses complying with 10 of the elements. However, no house in the study featured all of the elements, and none met the full criteria of either Option 1, 2 or 3 as proposed in the ABCB Options Paper. Photographs of best practice compliance with individual standards demonstrate that developers were able to maintain a consistent 'look' in the house designs while incorporating accessible features. An assessment of the cost implications of meeting the guidelines indicates that if consideration is taken at the design stage, the majority of the standards are deemed to require little or no additional cost, while only one (dwelling access), could possibly involve a substantial extra cost.

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Introduction

In October 2017, the Building Ministers' Forum (BMF) proposed to the Council of Australian Governments (COAG) that a national assessment be undertaken to consider applying a minimum accessibility standard for private dwellings in Australia through the National Construction Code (NCC). This was subsequently agreed by COAG. In September 2018, the Australian Building Code Board (ABCB) released an Options Paper, which set out a preliminary menu of options and sought broader community and industry input (ABCB, 2018). The ABCB is undertaking a Regulation Impact Assessment (RIA) of options for minimum accessibility standards for housing for potential inclusion in the 2022 NCC (ABCB, 2020).

The ABCB consulted widely with stakeholders, through:

- Consultation forums — ABCB held consultation forums in each capital city during October and November 2018
- Written stakeholder submissions — ABCB received 179 submissions from a wide range of organisations and individuals
- ABCB released a consultation report summarising stakeholder feedback on the Options Paper in April 2019

The consultation process provides a unique opportunity to improve the design of new residential housing for all Australians. The NCC has a three-year amendment cycle and the RIA consultation process is lengthy. The current consultation is in its final phase for potential changes commencing in 2022. Housing is critical social infrastructure that is with us for 30 or 40 years, so it is vital to get it right.

The twin Royal Commissions into aged care and disability demonstrate public and political will to address issues across both sectors and represent an opportunity for lasting change (Aged Care Royal Commission, 2019; Disability Royal Commission, 2019). Institutional housing that segregates people with disability and the frail elderly is not working. The recent challenges experienced by the aged care sector during the COVID-19 pandemic also highlight the importance of helping our ageing population to remain in their own homes for as long as possible. Universal design principles attest that well-designed housing that works for people with mobility impairments does not compromise the design of housing for the general population – rather, it enhances the built environment. Indeed, a 'willingness-to-pay' survey conducted by the Centre for International Economics (CIE) as part of its Consultation Regulation Impact Statement commissioned by the ABCB confirmed that people in households that do not currently contain any persons with limited mobility place considerable monetary value on the accessibility features (CIE, 2020). The current consultation process is an opportunity to consider the functionality of new housing for everyone and the need to future-proof Australian housing for an ageing population.

Aims of this study

The aims of this study are to:

1. Test the hypothesis that some accessibility features are already incorporated into the most popular house designs being built in Australia, but not in a systematic way that makes all new builds accessible.
2. Demonstrate that accessibility features are basic elements of good house design for the general population, and not the features commonly seen in public accessible toilets and institutions.
3. Indicate the likely cost of including accessibility features in new builds.

Method

An initial desktop search identified the ten largest residential developers in Australia in 2018-19, based on the total number of dwellings built. This search, complemented by phone calls, then identified each developer's ten most popular house designs, including which of these designs had a display home in greater Melbourne. An audit of 20 homes (maximum of three per developer) was conducted, and a preliminary analysis of the results is included below. The audit involved photographing, measuring, and assessing the presence of elements outlined in Livable Housing Australia (LHA)'s Silver, Gold and Platinum levels of design in these new builds. These three levels are determined by using the LHA's Livable Housing Design Guidelines, consisting of 15 Design Elements (see Table 1), most of which are also included in the CIE report for the ABCB (LHA, 2017; CIE, 2020).

- Option 1 includes 5 recommendations at Silver Standard – Elements 1 - 4 and 6.
- Option 2 includes 12 recommendations at Gold Standard – Elements 1 - 12
- Option 3 includes 13 recommendations at Gold Standard with some Platinum – Elements 1 – 12, and 14. With Elements 8 and 14 at Platinum Level.

The purpose of the photos is to provide evidence that accessible features do not need to be institutional or unsightly but can be routinely incorporated into contemporary new homes. Photos of features that did not comply were also taken.

Table 1. Livable Housing Australia's 15 Livable Housing Design Elements

	LHA Design Elements	Performance Requirements
1	Dwelling Access	A safe, continuous, step-free pathway from the street entrance and/or parking area to a dwelling entrance that is level
2	Dwelling Entrance	At least one step-free entrance into the dwelling and the entrance should be connected to the safe and continuous pathway as specified in Element 1
3	Internal Doors and Corridors	Widths of the internal doors and corridors facilitates comfortable and unimpeded movement between spaces
4	Toilets (Accessible ground level)	The ground (or entry) level has a toilet to support easy access for home occupants and visitors with adequate circulation space
5	Shower (Accessible ground level)	A slip resistant, hobless shower recess should be featured in the corner of a bathroom in the dwelling
6	Reinforcement of Bathroom and Toilet Walls	The toilet and bathroom walls are reinforced to enable future installation of grabrails
7	Internal Stairways	Where installed, stairways are designed to reduce the likelihood of injury and enable safety pathway
8	Kitchen Space	The kitchen space is designed to support ease of movement between fixed benches and to support easy adaptation
9	Laundry Space	The laundry space is designed to support ease of movement between fixed benches and to support easy adaptation
10	Ground (or Entry Level) Bedroom Space	There is a space on the ground (or entry) level that can be used as a bedroom
11	Switches and Power-points	Light switches and powerpoints are located at heights that are easy to reach for all home occupants
12	Door and Tap Hardware	Level or D-Pull handle door hardware and taps located at a height that can be independently operate by all home occupants
13	Family-Living Room Space	The family/living room features clear space to enable the home occupant to move in and around the room with ease
14	Window Sills	Windows sills are installed at a height that enables home occupants to view the outdoor space from either a seated or standing position
15	Flooring	Floor coverings are slip resistant to reduce the likelihood of slips, trips and falls in the home

Findings

Incorporation of assessable features in the sample assessed

The findings of the audit of the display homes, based on LHA's Design Guidelines, is shown below (see Table 2). Dwellings are listed in order from the most to the least compliant. LHA elements are listed in order of the least often compliant (left) to the most often compliant (right). Two elements (E3 and E4) are broken into two parts – E3.1 Doors, E3.2 Corridors, E4.1 Toilet – walls and E4.2 Toilet – front because the two parts of these elements show quite different results. Element 6 which is the reinforcement of bathroom walls was not possible to assess. Element 15 was not assessed because it is not required for Option 1/Silver or Option 2/Gold accessibility and was difficult to assess using the study methodology.

Table 2: Display homes and their compliance with Livable Housing Design Elements

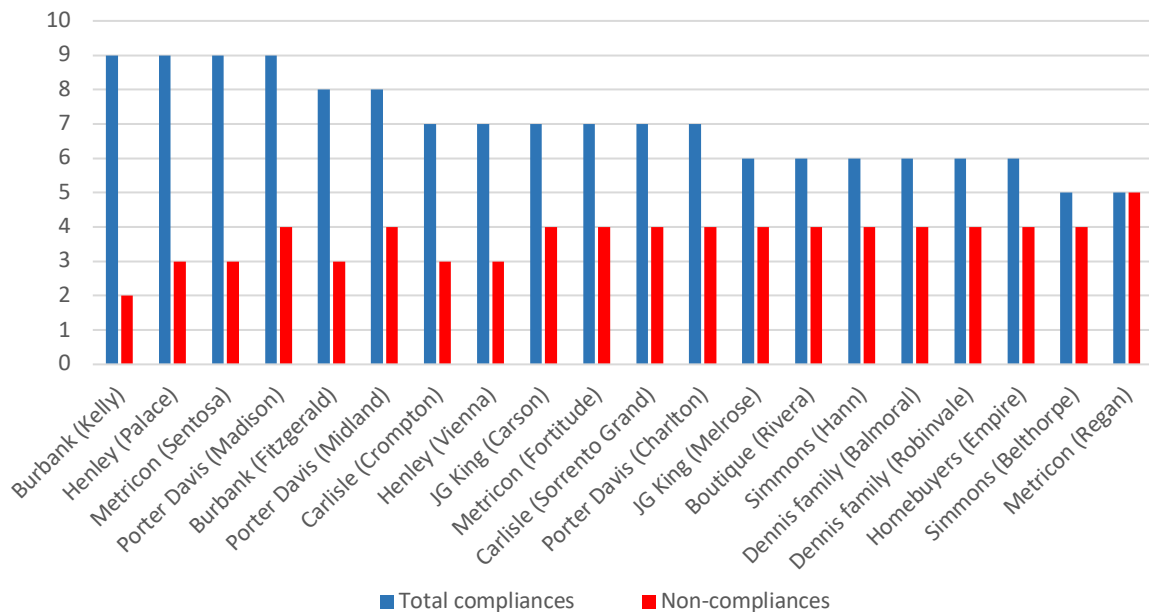
Dwellings Assessed	Livable Housing Design Elements														
	Doors	Toilet - front	Shower	Toilet - walls	Laundry	Stairs	Corridors	Kitchen	Entrance	Switches	Bedroom	Access	Windows	Taps & handles	Living
	E3.1	E4.2	E5	E4.1	E9	E7	E3.2	E8	E2	E11	E10	E1	E14	E12	E13
Henley (Palace)															
Porter Davis (Madison)															
Metricon (Sentosa)															
Burbank (Kelly)															
Porter Davis (Midland)															
Burbank (Fitzgerald)															
JG King (Carson)															
Carlisle (Crompton)															
Henley (Vienna)															
Metricon (Fortitude)															
Porter Davis (Charlton)															
Carlisle (Sorrento Grand)															
JG King (Melrose)															
Boutique (Rivera)															
Simmons (Hann)															
Dennis Family (Balmoral)															
Dennis Family (Robinvale)															
Homebuyers (Empire)															
Metricon (Regan)															
Simmons (Belthorpe)															

E1: Dwelling Access, E2: Dwelling Entrance, E3.1: Internal Doors, E3.2: Internal Corridors, E4.1: Width between walls either side of closet toilet, E4.2: Space in front of toilet, E5: Shower (Accessible ground level), E6: Reinforcement of Bathroom Walls, E7: Internal Stairways, E8: Kitchen Space, E9: Laundry Space, E10: Entry Level Bedroom Space, E11: Light Switches and Power-points, E12: Door and Tap Hardware, E13: Family Living Room Space, E14: Window Sill Height (Note that the study methodology does not allow analysis of E6 or E15)

Legend Platinum Level Gold Level Silver Level

The findings of the audit confirm the hypothesis of this study. While on average seven Design Elements were incorporated into the 20 display homes, none of the dwellings featured all of the elements (see Table 2).

Figure 1: Display home compliance with LHA's Design Elements

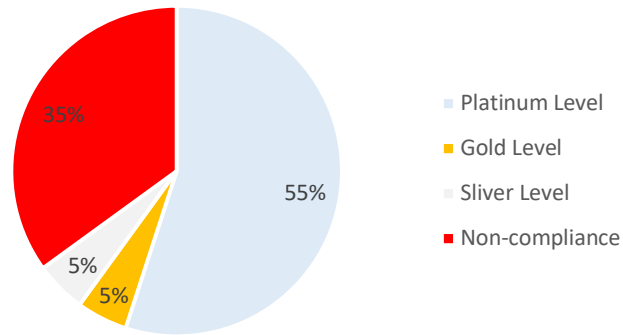


Individual analysis of elements incorporated in the case study designs

Element 1: Continuous step-free dwelling access from the street entrance

- 12 out of the 13 display homes that complied with the minimum accessibility standards (Silver level) also satisfied the Gold level or above.
- The housing designs that meet the standards of Element 1 have step-free accesses from the allotment boundaries. Two covered parking spaces are standard in these dwellings. This allows a person to open their car doors fully and easily move around the vehicle when the parking space is part of the dwelling access.
- Element 1 Platinum level display homes provide the widest pathways to the dwelling entrances among the 20 audited designs.

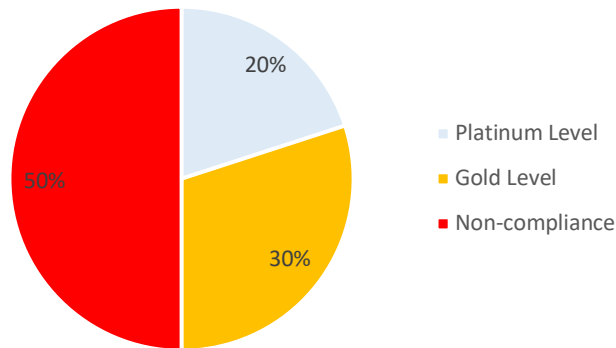
Figure 2. Results for audit of Element 1 (n=20)



Element 2: Level (step-free) dwelling entrance

- Overall 50% of the display homes met the Silver level.
- Two of the display homes provided step-free entrances.
- The clear opening of the entry doors in 3 of the display homes were narrower than 800mm, which was below the minimum requirement set by the LHA Design Elements (820mm) and the ABCB Options (800mm).

Figure 3. Results for Element 2 (n=20)



Element 3: Internal doors and corridors that facilitate comfortable and unimpeded movement between home spaces

- Despite 14 of the 20 display homes providing wider than 1000mm internal corridors throughout (the minimum requirement stated by the LHA and the ABCB Options), all the display homes' internal doors had a clear opening less than the minimum required width of 820mm.
- Hence, none of the display homes complied with the accessible internal doors and corridors element.

Figure 4a. Results for Element 3, internal doors and corridors (n=20)

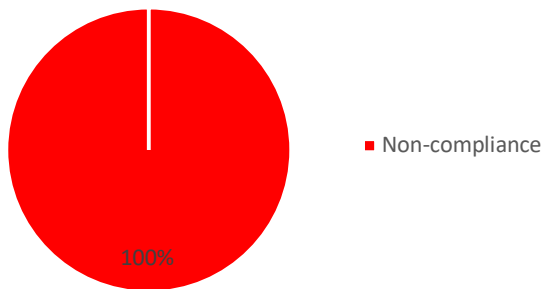


Figure 4b. Element 3.1: Clear opening width of internal (n=20)

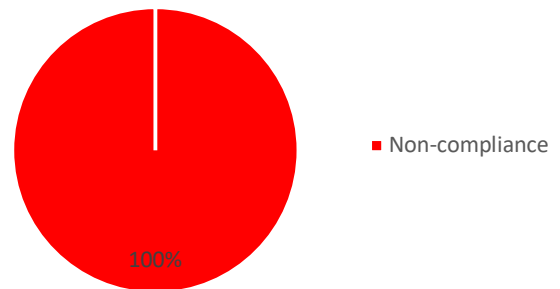
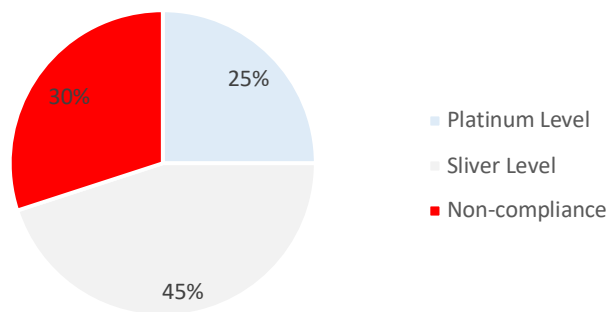


Figure 4c. Element 3.2: Width of internal corridors (n=20)



Element 4: Accessible toilets on the ground (or entry) level

- 9 of the 20 inspected display homes were double-storey.
- All the display designs had a toilet on the ground/entry level.
- 40% of dwellings had ground level toilets with at least 900mm clearance between the walls on either side of the toilet (see Figure 5a).
- Only one of the toilets satisfied the requirement of providing a 1200mm or above circulation space between the front edge of toilet and the arc of the door (see Figure 5b).

Figure 5a. Results for Element 4.2: Wall clearance in toilets (n=20)

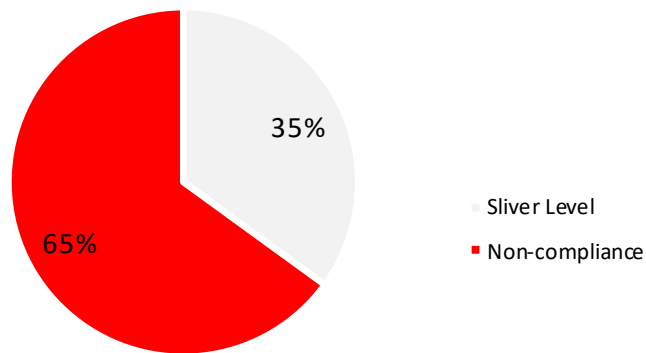
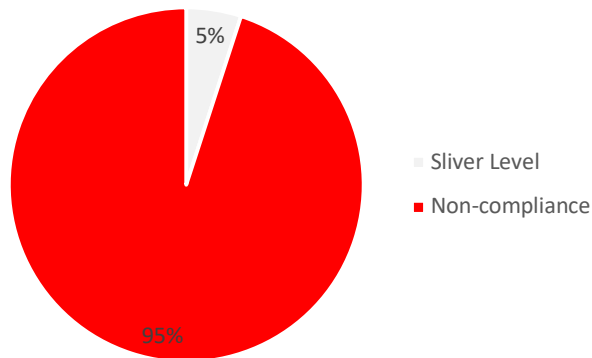


Figure 5b. Element 4.1: Circulation space in toilets (n=20)



Element 5: Accessible bathrooms and showers for easy and independent access for all home occupants

- Only one of the shower recesses in the display homes had the built-in hobless design (see Figure 6a) with the shower screen easily removable at a later date. A removable shower screen is installed separately, once floor surfaces are in place. This allows the ready removal of the screen without causing damage to surfaces or waterproofing integrity (see Figure 6b; Ryan, 2017).
- Option 1 in the CIE Report (2020) does not include an accessible shower.

Figure 6a. Results for Element 5 Accessible shower (n=20)

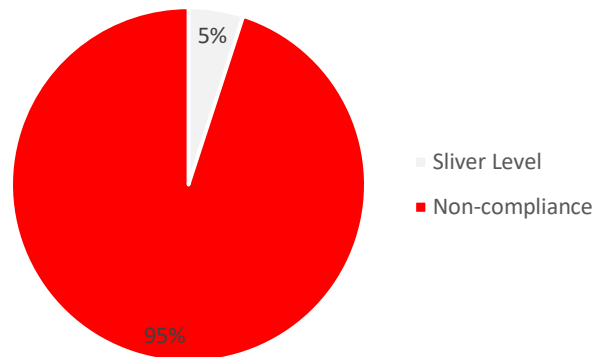
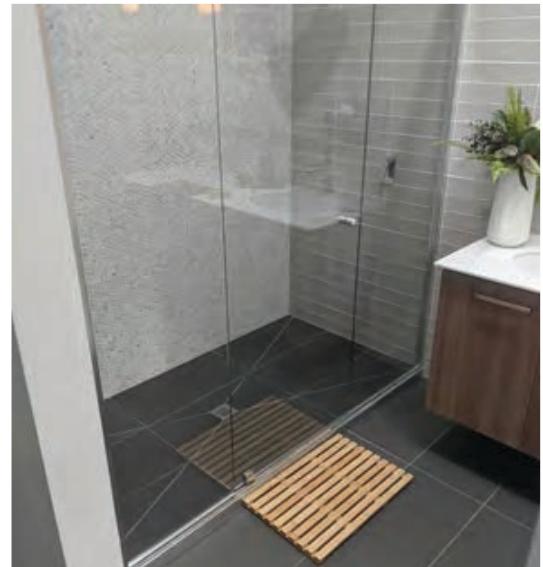


Figure 6b: Hobless shower with removable shower screen (Ryan, 2017)



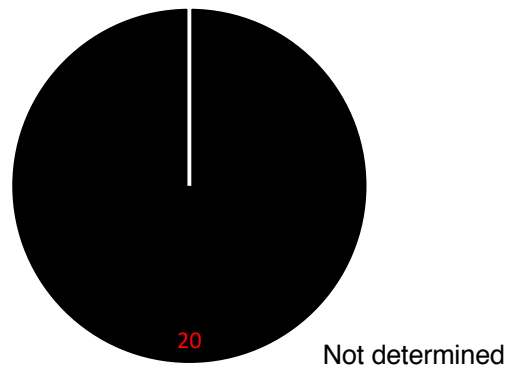
Figure 6c: Shower recess with hob



Element 6: Reinforcement of bathroom and toilet walls built-in to enable the installations of grabrails

- No engineering drawings of the display homes were provided to determine the existences of additional reinforcements built into the bathroom and toilet walls to enable future installation of grabrails
- The ABCB Options do not specify the construction of reinforcements

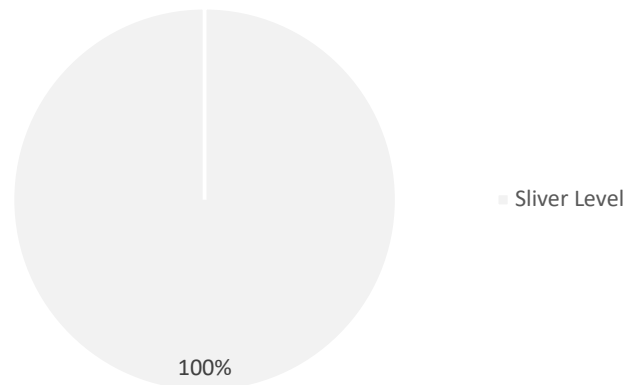
Figure 7. Results for Element 6 Wall reinforcement (n=0)



Element 7: Safe internal stairway designs

- The Silver level specifications stated by LHA is a requirement for all new homes under the National Construction Code (NCC).
- Stairways in the 9 double-storey dwellings featured a continuous handrail on one side of the stairway where there was a rise of more than 1m, which satisfies the Silver level requirement.

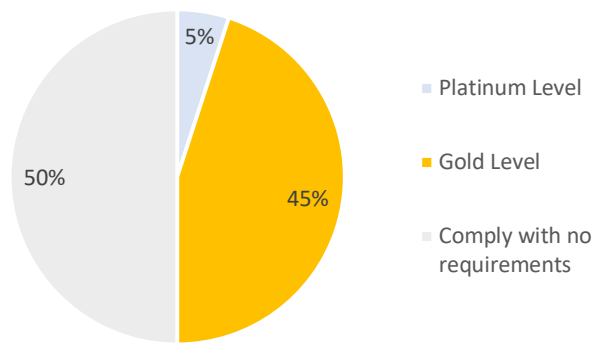
Figure 8. Results for Element 7 Stairs (n=9)



Element 8: Ease of movement in kitchen spaces

- No requirements for Silver level/Option 1
- The floor finishes of the kitchen spaces in all the inspected display homes are considered slip resistant as this is a requirement for all new homes under the NCC.
- 9 of the display homes provided no less than 1200mm (but no greater than 1500mm) clearance in front of fixed benches and appliances (excluding handles).
- One display home provided a 1830mm clearance in the kitchen, which is above the Platinum level's 1550mm clearance requirement (as well as the 1500mm requirement for the corresponding Option 3 requirement)

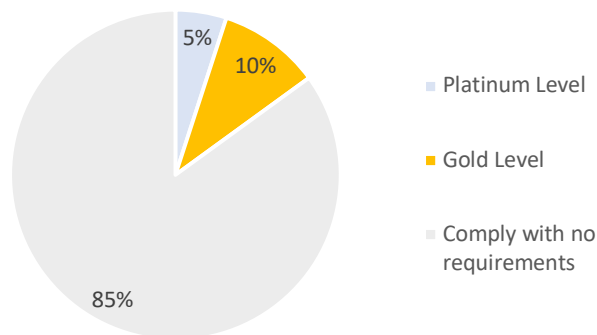
Figure 9. Results for Element 8 Kitchen (n=20)



Element 9: Ease of movement in laundry space

- No requirements for Silver level/Option 1
- The floor finishes of the laundry spaces in all the inspected display homes are considered slip resistant as this is a requirement for all new homes under the NCC.
- 2 of the display homes provided no less than 1200mm (but no greater than 1500mm) clearance in front of fixed benches and appliances (excluding handles).
- One home offered a 1860mm clearance in the laundry, which was above the Platinum Level and Option 3's 1550mm clearance requirements

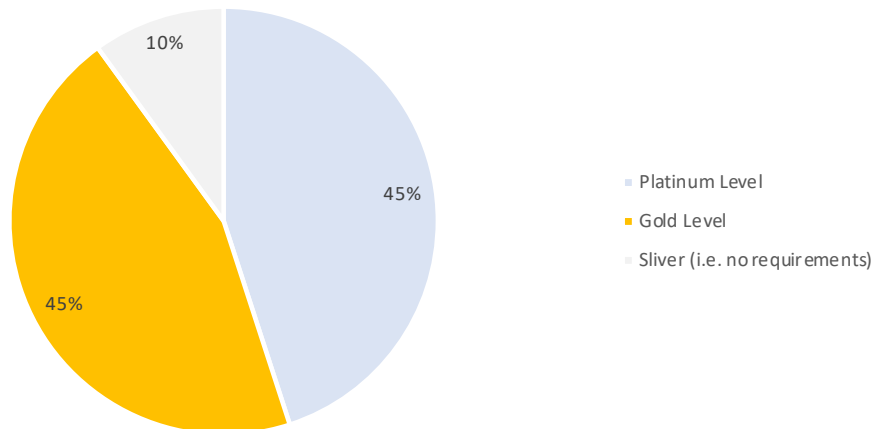
Figure 10. Results for Element 9 Laundry (n=20)



Element 10: Ground (or entry level) bedroom space

- No requirements for Silver level/Option 1
- Two double-storey display homes did not include a bedroom or space on the ground/entry level that could be used as a bedroom
- Two double-storey display homes included studies without a door on the ground/entry level that could be used as a temporary bedroom with a screen. These studies would need to be enclosed and have a door installed if this space was to be used for a permanent bedroom.
- All the other display homes had at least one bedroom on the ground/entry level. These bedrooms satisfied at least the Gold level and Option 3 requirements

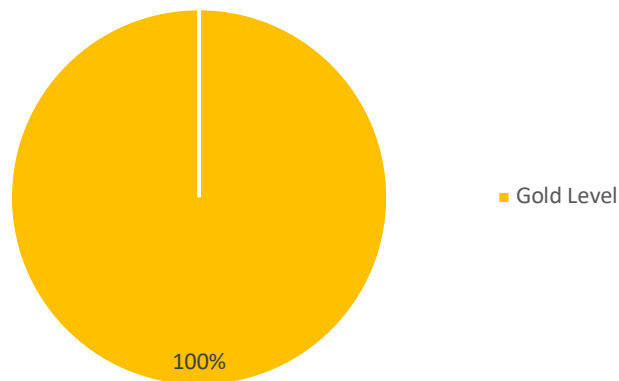
Figure 11. Results for Element 10 Bedroom (n=20)



Element 11: Accessible switches and power-points for all home occupants

- No requirements for Silver level/Option 1
- The light switches in the 20 display homes were located at 1050mm to 1100mm above the floor levels, which satisfied the requirements of Option 3 and the Gold level
- The power-points in the 20 display homes were installed at heights of 300mm to 350mm above the finished floor levels
- The Platinum level for Element 11 requires that the light and power-point switches be rocker action, toggle or push pad in design with a recommended width of 35mm. While all the display homes featured toggle or push pad switches, none of them had a width of 35mm or above.

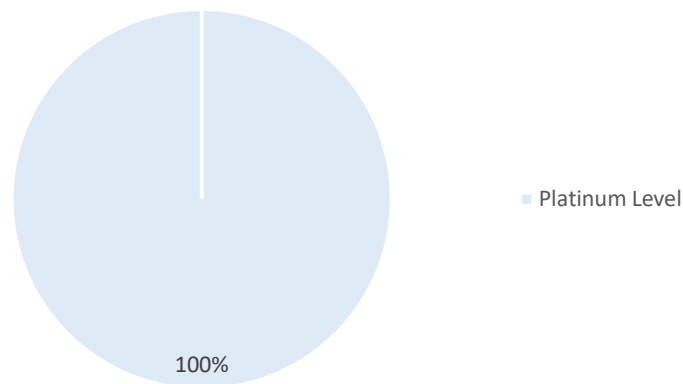
Figure 12. Results for Element 11 Light and power-point switches (n=20)



Element 12: Accessible door and tap hardware

- Door handles in all of the audited display homes were installed at between 1000mm to 1050mm above the finished floor, which complied the positioning requirements of Option 3 and the Platinum level. The LHA Design Elements and the ABCB Options recommended the door handles to be installed at between 900mm – 1100mm above the finished floor.
- The doorways also featured lever or D-pull style door hardware, satisfying the LHA Design Elements' door handle designs requirement
- Basins, sinks and tubs in all of the display homes featured lever or capstan style tap hardware with a central spout, meeting the Platinum level criteria for tap hardware

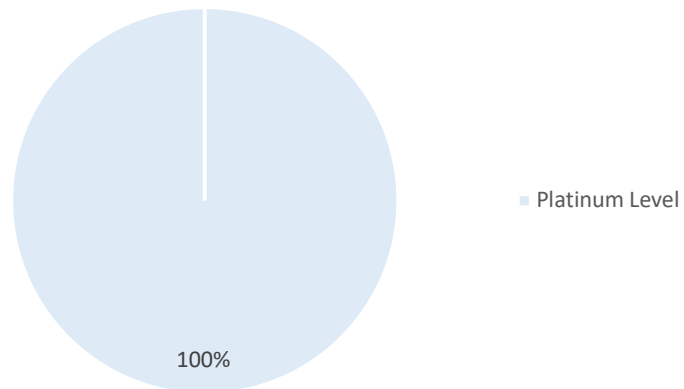
Figure 13. Results for Element 12 Door and tap hardware (n=20)



Element 13: Family living room space with clear space for ease of movement

- All 20 display homes featured generous free space in the family living room on the ground floors, with no less than 2250mm in diameter and enabled ease of movement clear of furniture placements.

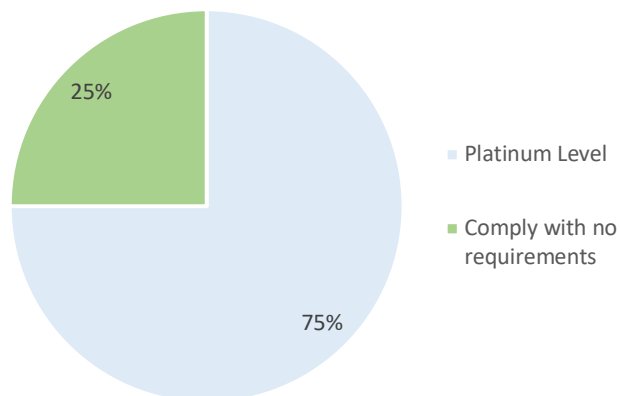
Figure 14. Results for Element 13 Family living room (n=20)



Element 14: Window sills installed at a height that enables home occupants to view the outdoor space

- 15 display homes had ground/entry level window sills installed no higher than 1000mm above the finished floor level. This enabled home occupants to view the outdoor space from either a seated or standing position.
- The measurements did not include windows in the bedrooms and toilets or shower rooms.

Figure 15. Results for Element 14 Window sill height (n=20)



Examples of compliance and non-compliance with LHA Design Elements

Elements 1 & 2: Dwelling access and entrance accessibility

The 'Fitzgerald' and 'Kelly' designs in Wollert by Burbank Group

✓ Platinum Level dwelling access

✓ Platinum Level dwelling entrance

The 2 houses provided a safe, continuous, step-free pathway from the street entrance and parking area to the dwelling entrance that is level. Both the designs also incorporated step-free entrance doors into the dwelling. They were the only designs that connect the level entrance to the safe and continuous pathway as specified in Elements 1 and 2.



The 'Sorrento Grand' in Wollert by Carlisle Homes

✗ Non-compliant dwelling access

✗ Non-compliant dwelling entrance

There was a step from the allotment boundary to the dwelling entrance. The doors served as entrances to the dwelling were not step-free and continuous. There was also a step on the path from the car parking space to the dwelling entrance, which meant no continuous step-free pathway could be relied upon when entering the dwelling from the street entrance.



Element 3: Internal doors and corridors designs

The 'Charlton' design in Kalkalo by Porter Davis Homes

X Non-compliant door opening

✓ Platinum-standard corridor width

The internal doors on the ground floor had a unified opening width of 760mm, which was below the minimum required width of 820mm. However, the width of the internal corridor in the house was 1400mm, wider than the optimal width requirement (1200mm) (LHA, 2017; CIE, 2020).



Element 4: Toilet accessibility

The 'Empire' designs in Donnybrook by Homebuyers

✓ Sliver Level clear width between a wall and amenities

X Non-compliant circulation space

The toilet closet was positioned with a width of 1180mm between the walls of the toilet space. This is above the 900mm clear width Silver level requirement. However, like all other ground/entry level toilets inspected, the circulation space between front edge of the toilet and arc of the internal door is less than the 1200mm minimum requirement (LHA, 2017).



Element 5: Accessible shower designs

The 'Kelly' design in Wollert by Burbank Group

✗ Non-compliant shower recess design (required by Silver Level and Option 1)

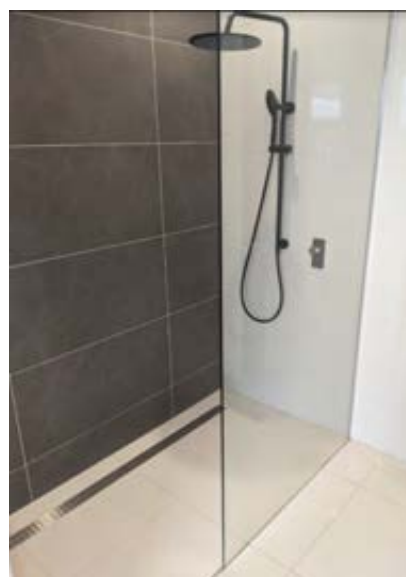
The shower screen was considered not easily removable, though the recess is located in the corner of the bathroom as required to enable the installation of grabrails at a future date. The shower recess was not regarded as hobless because it did not provide a flat entry. A hobless shower recess should be prepared before the floor finishes are applied. A strip drain is also required (LHA, 2017; CIE, 2020).



The 'Sentosa' design in Point Cook by Metricon

✓ Silver Level shower design

An opening beside the glass shower screen provided a level entry to the shower recess. The shower recess was hobless as there was no dam or curb at the boundary and a strip drain was installed (refer to Figure 6c for comparison). This shower space fell short of Gold level compliance only because it is narrower than 900mm (870mm in width).



Element 8: Kitchen space

The 'Charlton' design in Kalkalo by Porter Davis Homes

✓ Gold Level kitchen space

The clearance in front of fixed benches and appliances (excluding handles) in the kitchen space is measured at 1400mm. Gold Level requires at least 1200mm clearance (LHA, 2017). Large clearances support ease of movement between fixed benches and easy adaptations.



The 'Empire' design in Donnybrook by Homebuyers

✗ Does not comply with Gold or Platinum Level kitchen space requirements

The clearance in front of fixed benches and appliances (excluding handles) in this kitchen space is measured at 980 mm. Gold level requires at least 1200mm clearance in front of fixed benches and appliances (excluding handles) (LHA, 2017).



Element 9: Laundry space

The 'Madison' design in Michelham by Porter Davis Homes

✓ Platinum Level laundry space

1860mm clear width was provided in front of the fixed benches and appliances (excluding handles). A 600mm deep recessed area is provided for the installation of a washing machine. Platinum Level requires a minimum 1550mm clearance in front of the fixed bench in a laundry room to support ease of movement and easy adaptations. 600mm minimum deep recessed area is required for laundry room appliances (LHA, 2017).



The 'Belthorpe' design in Wollert by Simmonds Group

✗ Does not comply with Gold or Platinum Level laundry space requirements

900mm clear width was provided in front of the fixed benches and appliances (excluding handles). A 600mm deep recessed area is provided for the installation of a washing machine (though not aligned with the fixed bench). Gold Level requires a minimum 1200mm clearance in front of the fixed bench in a laundry room (LHA, 2017).



Cost implications of assessable features

This study did not include a detailed quantity survey of the cost of compliance with the individual options or inclusion of particular LHA elements. However, the inclusion of each element was assessed against expected changes in cost for the developer (see Table 3). Where green is no additional upfront cost (e.g. having lower window sills), orange is a small additional upfront cost (e.g. a larger door and stronger hinges), and red is a significant potential upfront cost (e.g. Step-less access on a sloping site – although exemptions are proposed for this).

Table 3. Anticipated cost burden of incorporating additional Livable Housing Design Elements

Design Elements	Cost		
	min	low	high
1 Dwelling Access			Red
2 Dwelling Entrance		Orange	
3 Internal Doors and Corridors		Orange	
4 Toilets		Orange	
5 Shower		Orange	
6 Reinforcement of Bathroom and Toilet Walls		Orange	
7 Internal Stairways		Orange	
8 Kitchen Space		Orange	
9 Laundry Space	Green		
10 Ground (or Entry Level) Bedroom Space	Green		
11 Switches and Powerpoints	Green		
12 Door and Tap Hardware		Orange	
13 Family-Living Room Space	Green		
14 Window Sills	Green		
15 Flooring		Orange	

When assessed at the initial design stage, most additional costs of the proposed design element requirements are either negligible (lower window sills) or modest (extra noggins in bathroom walls, additional tiles in larger bathrooms). The element with the largest potential cost increase, Element 1 Dwelling Access, will depend on the slope of the plot of land being developed. This has been recognized in the Options paper with a proposal for possible exemptions for houses on sites that slope greater than a set limit – a proposal that should avoid extreme cost imposts for difficult sites.

A key consideration of cost is perception. A small additional cost for an individual item (for example a larger front door that may cost an extra \$1000 dollars), will be viewed through the prism of multiple houses built by a volume builder (and so assessed as an additional cost of \$100,000 for front doors if they build 100 houses a year). When many small additional costs are tallied then, larger doors, step-less showers, extra tiles in larger bathrooms, larger light switches and power-points, and so on, the costs can seem considerable. However, in practice these costs are merely delayed and passed on to a new party, as inappropriate housing needs to be modified by the home user, often at a far higher cost than if the features were included in the original build. By embedding the standards in the Building Code of Australia requirements, the additional costs are both minimized, and shared between the consumer (who pays more but for a better, more appropriate house), and the developer (who must absorb some cost to stay competitive in the market).

Discussion

All 20 of the display homes assessed in this audit had at least six of the 15 Livable Housing Design Elements incorporated into their design. More than half of the homes had eight or more elements overall, and nine of the homes had five or more Platinum elements. The compliance of the homes across Options 1, 2, and 3 are discussed in more detail below.

Option 1: Requirement of Elements 1, 2, 3, 4 and 6

Assessment of house plans against the requirements for Option 1 (Silver) demonstrates the extent of partial but not full compliance with accessible design. Most (95%) of the dwellings complied with either Dwelling Access (E1) or Dwelling Entrance (E2) requirements, but few (20%) included both – yet both are essential for someone with a mobility impairment entering a home. This is consistent with the CIE report which concluded that 5-10% of new stock meets Silver level based on previous estimates and stakeholder feedback (CIE, 2020).

No dwellings met the Internal Doors and Corridors (E3) requirements. However, there are two parts to this element – internal corridor space and internal doors. Of the 20 dwellings assessed, 14 (70%) met the internal corridor space standards (E3.2) but none complied with the internal door dimension standard (E3.1). Although there would be some initial change over costs, once wider standard doors become standard, the incremental cost of wider doors is minimal.

The Accessible Ground Floor Toilets (E4) element also has three parts – a ground floor toilet, a minimum width of 900mm (E4.1), and sufficient space in front of the toilet (E4.2). All of the dwellings included a ground floor toilet, but only one had a toilet of sufficient dimensions to comply with Option 1 (minimum 1200mm between pan and door swing). More than a third (35%) complied with the silver wall-to-wall width of 900mm. These findings suggest that many of the individual requirements to comply with Option 1 are already present in new builds and are accepted industry practice. However, they are incorporated into the designs in a random way that does not make the dwellings consistently accessible.

Note that the requirement for Element 6 could not be established using the current methodology.

Option 2: Requirement of Elements 1 to 12

To qualify for Option 2 (Gold), building plans must meet 12 of the Design Elements. This includes the five elements that constitute Option 1 (but at a Gold, not Silver standard), plus Element 5 to 12. In reference to Elements 6 to 12, all of the buildings in the sample included at least three of these in their designs (Three-elements = 20%; four-elements = 60%; five-elements = 20%). However, similar to the situation with Option 1 compliance, no building plan included all of the additional Option 2 elements.

None of the buildings met all of the requirements of Element 5 (Accessible Bathrooms and Showers). This element consists of several components:

- Ground floor level shower
- Shower position (in corner)
- Minimum shower size (900 mm²)
- Minimum area around shower (900 mm² or 1200 mm²)
- Hob-less or step-less shower with removable shower screens

Of the nine two storey dwellings, five had a shower on the ground floor. Of the 16 ground floor showers that were assessed for compliance, all included a shower in the corner of the room. The minimum shower size of 900 mm² included in the CIE report for the ABCB (CIE, 2020, p. 61 table 3.1) seems to be an error – this corresponds to a shower 30 mm x 30 mm in size. It is probable that the recommendations refer to minimum dimensions of 900 mm on each side of the shower (that would be consistent with LHA guidelines for Gold level). Using those criteria - none of the showers assessed conform because at least one dimension is 850, 860 or 870 mm in every case.

In regards to the minimum space around the shower, Option 2 requires a minimum of 900 mm x 900 mm, and Option 3 requires a min of 1200 mm x 1200 mm (same misunderstanding in table 3.1, which states that adjacent space to the shower recess should be at least 900mm² for Option 2 and 1200mm² for Option 3) (CIE, 2020, p. 61 table 3.1). There was a high level of compliance with the space around the shower with five showers complying with Option 2 and a further nine complying with Option 3.

However, according to the LHA guidelines, Gold level standard for shower access is 1200 mm x 1200 mm adjacent to shower. Platinum level access is a space of 1400 mm x 1400 mm adjacent to the shower. Options 2 and 3 for showers do not correspond to Gold and Platinum LHA. However, 4 of 16 homes met Gold level standard and 5 of 16 met the LHA Platinum level standard. Only one dwelling (6%) meeting the requirement for the shower to be step-less or hob-free.

Despite low compliance across some Option 2 requirements, others accessible features are more common. For instance, 90% of buildings included Element 10 (ground level bedroom), including 7 of 9 two-storey dwellings. Most (80%) dwellings had bedrooms that met either Gold (8 dwellings) or Platinum (8 dwellings) level requirements. All 20 dwellings included Elements 11 and 12 (accessible switches and power-points; and accessible door handles and tapware). So, as was the case with Option 1, none of the examples in the case study met *all* Option 2 requirements. However, many of the elements were either fully or partially present in the homes, and therefore are already part of current industry practice.

Option 3: Requirement of Elements 1 to 12 plus 14

The additional requirements for a dwelling to qualify for Option 3 (assuming they comply with the Option 2 requirements), is the addition of Element 14 (lower window sills in habitable areas), and additional space requirements for Element 8 (kitchen space – 1500mm clearance in front of fixed benches, up from 1200mm for Option 2). Low window sills were common, with 75% of the homes already including this feature in the living room, while 50% complied with the higher space standard of Element 8.

Silver level versus Gold/Platinum levels

The Livable Housing Design Elements focus on features of a dwelling that may or may not be present (e.g. step-less entry, ground level toilets, and frameless showers), or must meet designated space standards such as dimensions of front and internal doors, bathrooms, and bedrooms. Overall, the display homes showed a consistent pattern of exceeding some minimum Silver level requirements. When considering the space standards of elements that are common to all houses – including bedrooms, kitchens, living rooms, and bathrooms – the 20 audited homes demonstrated that current industry practice is capable of routinely meeting space standards at Gold levels. Internal stair dimensions in the 9 of 20 dwellings that were two-storey are the only element that is consistently at Silver level and not higher. However, conspicuous non-compliance is found in internal door dimensions (0%), ground level toilet dimensions (0%), frameless shower (5%), and front door dimensions (50%) which failed to meet Silver level requirements.

The first five accessible features (E1-E5), which constitute the bulk of requirements for compliance with Option 1 (Silver), are less often included in the existing housing plans than some of the features required for Option 2 (Gold). However, where they are included (E1 and E2) or partially included (e.g. internal corridor dimensions in E3.1), components of current house designs consistently exceed minimum levels.

In part, compliance with some Gold and Platinum level elements most likely reflects the fact that the dwellings assessed consist of suburban, detached family houses which in Australia are among the largest in the world in spatial terms. While caution should be used in assuming similar levels of compliance in inner city townhouses or apartments, the vast majority of new homes in Australia are built by volume home builders in new and existing suburbs.

While it is realistic for nearly all new homes to be built at the Option 2 level (Gold), there are going to be geographically complex sites where this will be near impossible or the costs will be prohibitive. Therefore, a simple, transparent and timely process is needed for obtaining an exemption based on the gradient and/or size of a house block.

A note on costs

This study did not explicitly attempt to quantify the additional cost of including the LHA's Design Elements at different space standard levels. However, the consistent exceeding of minimum (Option 1 or Silver) requirements across multiple design elements, coupled with the assessment of the likely scale of cost increases when elements are considered at the design stage as noted in Table 3, suggests that the cost of compliance has been factored in to current designs to a significant extent.

Conclusion

This study suggests that consistently incorporating accessible features into the building code for all new dwellings would not be a significant impost on volume builders of residential housing in Australia. Indeed, the country's biggest builders are already incorporating most of these features in some new builds because they are consistent with good design. Surprisingly, the audit of 20 display homes found that *all* the house designs had at least 5 elements that complied with either the Gold or Platinum levels. However, a notable example of widespread non-compliance is the width of internal doors. That being said, changing the standard width of doors is a common-sense change that is effectively cost neutral. Therefore, despite some compliance with the LHA's Livable Housing Design Guidelines in the 20 display homes, accessible elements related to the width of doors, the dimensions of the ground level toilet and a frameless shower were the most consistent barriers for people with mobility impairments.

The findings of this study support the idea that well-designed housing that works for people with mobility impairments does not compromise the design of housing for the general population – rather it enhances the built environment. The current ABCB consultation process is a unique opportunity to improve the functionality of new housing for everyone and future-proof Australian housing for our ageing population.

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